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THE

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VOLUME THE THIRTY-SIXTH.

BEING

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RELATING CHIEFLY TO THE YEAR

1899.

By J. A. Thomson, R. Lydekker, R. Bowdler Sharpe, G. A. Boulenger, W. A. Herdman, E. R. Sykes, E. A. Smith, G. C. Crick, A. Willey, A. W. Brown, D. Sharp, F. A. Bather, and R. von Lendenfeld.

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Explorate solum: sic fit via certior ultrà.

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Communications, Papers, and Memoirs intended for this work should be addressed to "THE EDITOR of the Zoological Record, Zoological Society, 3, Hanover Square, London, W." It is earnestly requested that in the case of separately-printed copies of papers so forwarded, the *original pagination* may be indicated.

The Editor thanks those Societies and individuals who have forwarded works and papers for the purposes of the Record, and suggests that Societies publishing Zoological Papers would much facilitate the work of the Recorders by forwarding a separate copy of each Zoological Memoir they publish to the Editor for the use of the Recorder. This is preferable to sending the entire volume, because each paper can go directly to the Recorder it concerns.

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PREFACE.

THE thirty-sixth volume of the Zoological Record is complete in itself; including, as it does, a record in each of the eighteen divisions, and no arrears having remained over from last year.

The Editor has the pleasure of thanking the Recorders for their work on behalf of the Zoologists of the world, and for the punctuality they have displayed in carrying out their tasks.

He also desires to thank the Librarians who have assisted him in revising and perfecting the list of Abbreviations and Periodicals.

The Editor wishes to call attention to the advertisement, annexed to this Volume, announcing the intention of the Zoological Society to publish an Index to the names of genera and sub-genera, supplementary to the Nomenclator Zoologicus of S. H. Scudder. *It is intended to include in this List all names omitted from Scudder's Nomenclator and from the Zoological Record subsequent to* 1879. The work is already well advanced, and it is hoped that any Zoologist who may know of omissions from the works mentioned will send the omitted names and references to Mr C. O. Waterhouse of the British Museum, Natural History, or to the Society. As many years may elapse before a complete Index of the described genera and species of animals can be published, it is important that this interim work should be made as perfect as possible.

D. SHARP.

CAMBRIDGE,

September 26, 1900.

CONTENTS.

CORRIGENDA.

MAMMALIA, p. 34, line 23, for "1892" read "1898."

BRYOZOA, p. 2, add after title (14) "14A. MAPLESTONE, C. M. Further descriptions of the Tertiary *Polyzoa* of Victoria: Part II. P. R. Soc. Victoria, pp. 1–13." [This paper has been accidentally omitted and will be duly recorded next year.]

INSECTA, p. 193, instead of "*Eulepsis*" read "*Eulepis*."

„ p. 275, line 23 from bottom, for "FAUST" read "BOLIVAR."

VERMES, p. 32, line 4, for "PHLEN" read "PLEHN."

ALPHABETICAL LIST

OF THE

ABBREVIATIONS

USED IN THE

ZOOLOGICAL RECORD, Vol. XXXVI, 1899,

FOR THE

TITLES OF THE JOURNALS, TRANSACTIONS, ETC.

THAT CONTAIN ZOOLOGICAL PAPERS;

WITH INDICATIONS OF SOME OF THE PRINCIPAL

LIBRARIES

IN WHICH THE BOOKS ARE CURRENT.

The primary object of this list is to enable those using the Record to find with ease the full title of a Journal they see quoted in an abbreviated form. The arrangement is therefore a simple alphabetical list of the abbreviations, uncomplicated by syllabic or verbal limitations.

The list has also to serve the Recorders and others as a list of Journals, and for this purpose it is important that it should be fairly complete as regards current periodicals. In order to increase the utility of the list, the abbreviations have been made on a uniform system; but a few exceptions have, in practice, been found necessary. The chief points that have been kept in view in constructing the abbreviations may be briefly stated as follows:—

The words selected as distinctive in each title are reduced in most cases to three or four.

A distinct abbreviation is used for each different word, and the same abbreviation for the same word is used throughout the list.

Accents are omitted. As a rule the first word of the title is represented by an abbreviation, but this rule is departed from in the case of articles and prepositions, and occasionally in the case of adjectives that are useless for distinctive purposes. Thus "Annual Report" becomes "Rep.," and "Occasional Papers" becomes "Pap." Such adjectives as "New" and "Royal" are omitted, except when necessary for distinctive or other purposes.

The consecutive order of the words of the title is maintained in the abbreviation, except in a few cases where the arrangement af the words in the title is very unusual or faulty.

As an example of the form of abbreviation that is aimed at, we may take Bull. Soc. Moscou. The name of the locality is given at greater length than the more frequently used portions of the abbreviation.

After the titles, the place of publication is given, and this is followed by letters indicating some of the principal libraries in which the works may be consulted. The explanation of these letters is as follows:—

N. = British Museum Natural History: general library.
Nz. = " " library, zoological department.
Ng. = " " " geological "
K. = Science library; South Kensington Museum.
R. = Royal Society library.
Z. = Zoological Society library.
L. = Linnean " "
C. = Cambridge University library.
C, p or (*C*) p = Cambridge Philosophical Society library.
b, or g, or y, after C, or (*C*) = Cambridge Balfour, or Woodwardian Museum, or Physiological libraries respectively.
O. = Radcliffe library, Oxford.
§ is prefixed to titles added since the last list.

Abeille—L'Abeille: Journal d'entomologie publié par la Société entomologique de France. (Paris, 8vo.) Nz. C.

Abh. Ak. Berlin—Abhandlungen der königlichen Akademie der Wissenschaften zu Berlin. (Berlin, 4to.) N. K. R. Z. L. C, p. O.

Abh. Bayer. Ak.—Abhandlungen der mathematisch-physikalischen Classe der königlichen Bayerischen Akademie der Wissenschaften. (München, 4to.) N. K. R. Z. L. C, p. O.

Abh. Bohmisch. Ges.—Abhandlungen der mathematisch-naturwissenschaftlichen Classe der k. Böhmischen Gesellschaft. [Called also] Rozpravy trídy mathematicko-přírodvěcke královske Ceske společnosti Nauk. (Prag, 4to.) N. K. R. L. C, p.

Abh. Deutsch. Seefisch.-Ver.—Abhandlungen des deutschen Seefischerei-Vereins. (Berlin, 4to.) Nz. C.

Abh. geol. Karte Elsass—Abhandlungen zur geologischen Spezial-Karte von Elsass-Lothringen. (Strassburg, 8vo.) Ng.

Abh. geol. Landesanst. Darmstadt—Abhandlungen der grossherzoglich Hessischen geologischen Landesanstalt zu Darmstadt. (Darmstadt, 8vo.) Ng.

Abh. geol. Reichsanst.—Abhandlungen der Kaiserlich-Königlichen geologischen Reichsanstalt. (Vienna, 4to.) Ng. R. L. C, p.

Abh. Ges. Gorlitz—Abhandlungen der naturforschenden Gesellschaft zu Görlitz. (Görlitz, 8vo.) N. K. R.

Abh. Ges. Gotting.—Abhandlungen der königlichen Gesellschaft der Wissenschaften zu Göttingen. Mathematisch-Physikalische Klasse. Neue Folge. (Göttingen, 4to.) N. R. Z. L. C, p. O.

Abh. Ges. Halle—Abhandlungen der naturforschenden Gesellschaft zu Halle. (Halle, 4to.) N. K. R. Z. L. C. O.

Abh. Ges. Isis—Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' in Dresden. (Dresden, 8vo.) N. K. Z. C.

Abh. Ges. Konigsb.—[Part of *Schr. Ges. Konigsb.*, q.v.]

Abh. Ges. Nurnberg—Abhandlungen der naturhistorischen Gesellschaft zu Nürnberg. (Nürnberg, 8vo.) N. K. C.

Abh. Ges. Wien—[Part of *Verh. Ges. Wien*, q.v.]

Abh. Hamburg. Anst.—[Part of *Jahrb. Hamburg. Anst.*, q.v.]

Abh. Mus. Dresden—Abhandlungen und Berichte des königlichen zoologischen und anthropologisch-ethnographischen Museums zu Dresden. (Berlin, 4to.) Nz. Z. C.

Abh. Preuss. geol. Landesanst.—Abhandlungen der königlich Preussischen geologischen Landesanstalt (Neue Folge). [Formerly Abh. geol. Specialkarte von Preussen und den Thüringischen Staaten.] (Berlin, 8vo.) Ng. K. C.

Abh. Sachs. Ges.—Abhandlungen der k. Sächsischen Gesellschaft der Wissenschaften. (Leipzig, 4to.) N. K. R. C, p.

Abh. Schweiz. pal. Ges.—Abhandlungen der Schweizerischen paläontologischen Gesellschaft. Mémoires de la Société Paléontologique suisse. (Basel, &c., 4to.) Ng. R. Z. (*C*) g. O.

Abh. Senckenb. Ges.—Abhandlungen herausgegeben von der Senckenbergischen naturforschenden Gesellschaft. (Frankfort a.-M., 4to.) N. K. R. Z. L. C. O.

Abh. Ver. Bremen—Abhandlungen herausgegeben vom naturwissenschaftlichen Verein zu Bremen. (Bremen, 8vo.) N. K. R. Z. L. C.

Abh. Ver. Hamburg—Abhandlungen aus dem Gebiete der Naturwissenschaften herausgegeben vom naturwissenschaftlichen Verein in Hamburg. (Hamburg, 4to.) N. K. R. Z. L. C, b.

Abh. Ver. Karlsruhe—[Vide *Verh. Ver. Karlsruhe.*]

Abh. Ver. Kassel—[Issued wlth *Ber. Ver. Kassel*, q.v.]

Abh. Ver. Lotos—Abhandlungen des deutschen naturwissenschaftlich-medicinischen Vereines für Böhmen "Lotos." (Prag, 4to.) N. C.

Acta Ac. German.—N. Acta Academiæ Cæsareæ Leopoldino-Carolinæ Germanicæ naturæ curiosorum. [Called also] Verhandlungen der k. Leop.-Carol. deutschen Akademie der Naturforscher. (Halle, 4to.) N. K. R. Z. L. C, p. O.

Act. Ac. Cordoba—Actas de la Academia nacional de Ciencias en Córdoba. (Buenos Aires, 4to.) N. R. Z. L.

Acta Soc. Faun. Fenn.—Acta Societatis pro Fauna et Flora Fennica. (Helsingfors, 8vo.) N. R. L.

Acta Soc. Lund.—Acta regiæ Societatis physiographicæ Lundensis. [Published as part of *Acta Univ. Lund.*, q.v.]

Acta Soc. Sci. Fenn.—Acta Societatis Scientiarum Fennicæ. (Helsingfors, 4to.) N. K. R. Z. (*C*) p.

Acta Soc. Upsal.—Nova Acta regiæ Societatis Scientiarum Upsaliensis. (Upsala, 4to.) N. K. R. Z. L. C, p.

Acta Univ. Lund.—Acta Universitatis Lundensis. [Called also] Lunds Universitets Årsskrift, [and includes] Acta regiæ Societatis physiographicæ Lundensis, [also called] Kongl. fysiografiska Sällskapets i Lund Handlingar. (Lund, 4to.) N. K. R. L. C, p.

Act. Soc. Bordeaux—Actes de la Société Linnéenne de Bordeaux. [Includes Comptes-rendus.] (Bordeaux, 8vo.) N. Z. C.

Act. Soc. Chili—Actes de la Société scientifique du Chili. (Santiago, 4to.) R. Z.

Act. Soc. Espan.—Actas de la Sociedad española de historia natural. (Madrid, 8vo.) N. R. Z. C.

Act. Soc. Helvet.—Actes de la Société Helvétique des Sciences naturelles. [Called also] Verhandlungen der schweizerischen naturforschenden Gesellschaft. (Basel, &c., 9vo.) N. K. R. L. C. O.

Afh. Mus. Lund.—E Museo Lundii. En Samling af Afhandlinger. (Kjobnhavn, 8vo.) N. R. Z. L.

Agric. Gaz. N. S. W.—The Agricultural Gazette of New South Wales. (Sydney, 8vo.) Nz. R.

Amer. Geol.—The American Geologist, a Monthly Journal of Geology and allied Sciences. (Minneapolis, 8vo.) Ng. K. O.

Amer. J. Sci.—The American Journal of Science. (New Haven, 8vo.) N. K. R. Z. C, p. O.

Amer. Micr. J.—The American Monthly Microscopical Journal. (Washington, 8vo.) N. O.

Amer. Natural.—The American Naturalist. (Philadelphia, 8vo.) N. K. Z. L. C, b. O.

§ *An. Ac. Habana*—Anales de la real Academia de ciencias medicas, fisicas y naturales de la Habana. (Habana, 8vo.) N. R.

Anat. Anz.—Anatomischer Anzeiger. Centralblatt für die gesamte wissenschaftliche Anatomie. Amtliches Organ der anatomischen Gesellschaft. (Jena, 8vo.) Nz. K. Z. (*C*) b. O.

Anat. Hefte. Arb.—Anatomische Hefte. Referate und Beiträge zur Anatomie und Entwickelungsgeschichte. Erste Abteilung. Arbeiten aus Anatomischen Instituten. (Wiesbaden, 8vo.) K. C, b. O.

Anat. Hefte. Ergebn.—Anatomische Hefte. . . . . Zweite Abteilung. Ergebnisse der Anatomie und Entwickelungsgeschichte. (Wiesbaden, 8vo.) K. C, b. O.

Anh. Abh. Ak. Berlin—Anhang zu den Abhandlungen der K. preuss. Akademie der Wissenschaften zu Berlin. (Berlin, 4to.)

An. Mus. Buenos Aires—Anales del Museo nacional de Buenos Aires. (Buenos Aires, 4to.) Nz. Ng. R. Z. L. O.

An. Mus. Chile—Anales del Museo Nacional de Chile. Publicados por órden del Gobierno de Chile. Primera Seccion. Zoología. (Santiago, 4to.) Z.

An. Mus. Costa Rica—Anales del Museo Nacional de Costa Rica. (San José de Costa Rica, folio.) N. Z. O.

An. Mus. La Plata—Anales del Museo de La Plata. (Buenos Aires, &c., 4to.) Nz. Ng. R. Z. O.

An. Mus. Mexico—Anales del Museo nacional de México. (México, folio.) N.

An. Mus. Montevideo—Anales del Museo nacional de Montevideo. (Montevideo, 8vo.) N. L.

Ann. Brit. Geol.—Annals of British Geology. (London, 8vo.) Ng. K. O.

Annee biol.—L'année biologique. Comptes-rendus annuels des travaux de Biologie générale. (Paris, 8vo.) N. K. Z. L. C, b. O.

Ann. Fac. Marseille—Annales de la Faculté des Sciences de Marseille, publiées sous les auspices de la municipalité. (Marseille & Paris, 4to.) N. R. (*C*) p.

Ann. geol. Balkan.—Annales géologiques de la péninsule Balkanique. (Belgrade, 8vo.) Ng.

Ann. Geol. Pal.—Annales de Géologie et de Paléontologie, publiées sous la direction du Marquis Antoine de Gregorio. (Palermo, 4to.) Ng. K. (*C*) g.

Ann. Hebert—Annales Hébert. Annales de stratigraphie et de paléontologie du laboratoire de géologie de la faculté des Sciences de Paris. (Paris, 8vo.) Ng.

Ann. Hofmus. Wien—Annalen des k. k. naturhistorischen Hofmuseums. (Wien, 8vo.) N. K. R. Z. L. (*C*) p. O.

Ann. Inst. Jamaica—Annals of the Institute of Jamaica. (Kingston, 4to.) N. R. L. C.

Ann. Microgr.—Annales de Micrographie, spécialement consacrées à la Bactériologie aux Protophytes et aux Protozoaires. (Paris, 8vo.) N. O.

Ann. Mus. Belgique—Annales du Musée royal d'histoire naturelle de Belgique. (Bruxelles, 4to.) K. R. C. O.

Ann. Mus. Congo—État indépendant du Congo. Annales du Musée du Congo, publiées par ordre du Secrétaire d'état. Série II. Zoologie. (Bruxelles, 4to.) Nz. K. R. Z. L. C.

Ann. Mus. Genova—Annali del Museo civico di Storia Naturale di Genova. (Genova, 8vo.) Nz. K. Z. L. C. O.

Ann. Mus. Marseille—Annales du Musée d'histoire naturelle de Marseille, Zoologie. (Marseille, 4to.) Nz. K. R. Z. L. C, p. O.

Ann. Nat. Hist.—Annals and Magazine of Natural History, including Zoology, Botany, and Geology. (London, 8vo.) Nz. K. Ng. R. Z. L. C, b, p. O.

Ann. N. York Ac.—Annals of the New York Academy of Sciences. Late Lyceum of Natural History. (New York, 8vo.) N. K. R. Z. L. C, p.

Annot. zool. Japon.—Annotationes zoologicæ japonenses, auspiciis societatis zoologicæ tokyonensis. (Tokyo, 8vo.) Nz. K. R. Z. L. C, b.

Ann. Queensland Mus.—Annals of the Queensland Museum. (Brisbane, 8vo.) N. L. (*C*) p.

Ann. S. African Mus.—Annals of the South African Museum. (Cape Town, 8vo.) (*C*) p.

Ann. Sci. nat.—Annales des Sciences naturelles. Zoologie et Paléontologie. Huitième série. (Paris, 8vo.) Nz. K. R. Z. L. C, p. O.

Ann. Sci. nat. Porto—Annaes de Sciencias naturaes publicados por Augusto Nobre. (Porto, 8vo.) N. R.

Ann. Scott. Nat. Hist.—The Annals of Scottish Natural History: a quarterly magazine, with which is incorporated "The Scottish Naturalist." (Edinburgh & London, 8vo.) N. Z. L. C.

Ann. Soc. Agric. Lyon—Annales de la Société d'Agriculture, Histoire naturelle et Arts utiles de Lyon. Septième série. (Lyons & Paris, 8vo.) N. R. L.

Ann. Soc. Belge Micr.—Annales de la Société Belge de Microscopie. (Bruxelles, 8vo.) N. (*C*) p.

Ann. Soc. Bruxelles—Annales de la Société Scientifique de Bruxelles. (Bruxelles, 8vo.) N.

Ann. Soc. Charente—Academie de la Rochelle. Annales de la Société des Sciences naturelles de la Charente inférieure. (La Rochelle, 8vo.) N.

Ann. Soc. ent. Belgique—Annales de la Société entomologique de Belgique. [Called also Comptes-rendus.] (Bruxelles, 8vo.) Nz. Z. L. C. O.

Ann. Soc. ent. France—Annales de la Société entomologique de France. (Paris, 8vo.) Nz. K. R. Z. L. C.

Ann. Soc. geol. Belgique—Annales de la Société géologique de Belgique. [Consists of Bulletin and Mémoires.] (Liège, 8vo.) Ng. R. (*C*) p.

Ann. Soc. geol. Nord—Annales de la Société géologique du Nord. (Lille, 8vo.) Ng.

Ann. Soc. Linn. Lyon—Annales de la Société Linnéenne de Lyon. Nouvelle série. (Lyon, 8vo.) N. R. Z. L. C. O.

Ann. Soc. malac. Belgique—Annales de la Société royale malacologique de Belgique. [Consists of Mémoires and Bulletin, qq.v.] (Bruxelles, 8vo.) Nz. R. Z. L.

Annuaire Mus. St. Petersb.—Annuaire du Musée zoologique de l'Académie impériale de St. Pétersbourg. [Called also] Ezheghodnik zoologicheskagho muzeya imperatorskoi akademii nauk. (St. Pétersbourg, 8vo.) N. R. Z. L.

Annuar. Ac. Porto—Annuario da Academia polytechnica do Porto. (Porto, 8vo.) N.

Annuar. Univ. Coimbra—Universidade de Coimbra Annuario. (Coimbra, 8vo.) N.

§ *Ann. Univ. Kharkow*—Annales de l'Université de Kharkow [called also Zapiski imperatorskagho Khakovskagho Universiteta]. (Kharkow, 8vo.) (*C*) p.

Ann. Univ. Lyon—Annales de l'Université de Lyon. Nouvelle série. I. Sciences, Médecine. (Paris, 8vo.) N. R. C, p.

Ann. Univ. Toscane—Annali delle Università Toscane. (Pisa, 4to.) N.

An. Soc. Argent.—Anales de la Sociedad cientifica Argentina. (Buenos Aires, 8vo.) N.

An. Soc. Espan.—Anales de la Sociedad Española de historia natural. (Madrid, 8vo.) N. R. Z. C.

Antanan. Ann.—Antananarivo Annual and Madagascar Magazine. (Antananarivo, 8vo.) N.

An. Univ. Chile—Anales de la Universidad de Chile. (Santiago, 8vo.) N. Z. C.

Anz. Ak. Wiss.—Anzeiger der k. Akademie der Wissenschaften. Mathematisch-naturwissenschaftliche Classe. (Wien, 8vo.) N. R. L. Z. C.

Appalachia—Appalachia: the Journal of the Appalachian Mountain Club. (Boston, 8vo.) N.

Aquila—Aquila a Magyar madártani Központ folyóirata. (Budapest, 4to.) Nz. Z.

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Arb. Inst. Wurzburg—Arbeiten aus dem zoologisch-zootomischen Institut in Würzburg. (Wiesbaden, 8vo.) Nz. K. R. Z. L. C, b. O.

Arb. Lab. Warsaw—[Vide *Rabot. Lab. Warsaw.*]

§ *Arch. Sci. biol.*—Archives des Sciences biologiques. Publiées par l'Institut Impérial de Médecine expérimentale à St. Pétersbourg. (St. Pétersbourg, 4to.) O.

Arch. Sci. Nat.—Bibliothèque universelle. Archives des Sciences physiques et naturelles. Troisième période. [*Vide* also *C.R. Soc. Helvet.*] (Genève, 8vo.) N. R. C, p.

Arch. Ver. Mecklenb.—Archiv des Vereins der Freunde der Naturgeschichte in Mecklenburg. (Güstrow, 8vo.) N. L.

Arch. Zeeuwsch Genoots.—Archief. Vroegere en latere Mededeelingen voornamelijk in betrekking tot Zeeland, uitgeven door het Zeeuwsch Genootschap der Wetenschappen. (Middelburg, 8vo.) N.

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Arch. zool. exp. Notes—Archives de Zoologie expérimentale et générale. Notes et Revue. (Paris, 8vo.) Nz. K. R. Z. L. C, b. O.

Atti Acc. Gioen.—Atti dell' Accademia Gioenia di Scienze naturali in Catania. Serie quarta. (Catania, 4to.) N. R.

Atti Acc. Lincei—Atti della R. Accademia dei Lincei. [Consists of Memorie and Rendiconti, qq.v.] N. K. R. Z. L. (*C*) p. O.

Atti Acc. Napoli—Società Reale di Napoli. Atti della R. Accademia delle Scienze fisiche e matematiche. Serie seconda. (Napoli, 4to.) N. R. L. C, p. O.

Atti Acc. Palermo—Atti della Reale Accademia di Scienze, Lettere e Belle Arti di Palermo. (Palermo, 4to.) N. K.

Atti Acc. Pontan.—Atti della Accademia Pontaniana. (Napoli, 4to.) N. R.

Atti Acc. Pont. Lincei—Atti dell' Accademia Pontificia de' nuovi Lincei. (Roma, 4to.) N. K. R.

Atti Acc. Torino—Atti della R. Accademia delle Scienze di Torino. (Torino, 8vo.) N. K. R. Z. L. C, p.

Atti Ist. Napoli—Atti del Reale Istituto d' incoraggiamento alle Scienze naturali economiche e tecnologiche di Napoli. Quarta serie. (Napoli, 4to.) N. K.

Atti Ist. Veneto—Atti del Reale Istituto Veneto di Scienze Lettere ed Arti. Serie vii. (Venezia, 8vo.) N. K. R. L.

Atti Mus Milano—Atti della Società italiana di Scienze naturali e del Museo civico di storia naturale in Milano. (Milano, 8vo.) N. K. R. Z. C.

Atti Mus. Trieste—Atti del Museo civico di Storia naturale di Trieste. (Trieste, 8vo.) N. R.

Atti Soc. Ital.—[Vide *Atti Mus. Milano.*]

Atti Soc. Ligustica—Atti della Società Ligustica di Scienze naturali e geografiche. (Genova, 8vo.) N. R.

Atti Soc. Modena—Atti della Società dei Naturalisti di Modena. (Modena, 8vo.) N. Z. C.

Atti Soc. Toscana—Atti della Società Toscana di Scienze naturali residente in Pisa. [Consists of two separate works, Memorie and Processi verbali.] (Pisa, 8vo.) N. R.

Atti Soc. Veneto-Trent.—Atti della Società Veneto-Trentina di Scienze naturali residente in Padova. (Padova, 8vo.) N. Z.

Atti Univ. Genova—Atti della R. Università di Genova. (Genova, 8vo.) N.

Auk—The Auk: a Quarterly Journal of Ornithology. (New York, 8vo.) Nz. Z.

Avicula—Avicula, Giornale ornitologico italiano. (Siena, 8vo.) Nz.

Avicult. Mag.—The Avicultural Magazine, being the journal of the Avicultural Society for the study of foreign and British birds. (Brighton, 8vo.) Z.

Beiheft Hamburg Anst.—[Vide *Mt. Mus. Hamburg.*]

Beitr. Geol. Braunschweig—Beiträge zur Geologie und Paläontologie des Herzogthums Braunschweig und der angrenzenden Landestheile, herausgegeben im Auftrage des Herzoglichen Staats-Ministeriums von Herzoglicher Cammer, Direction der Bergwerke. (Braunschweig, 8vo.) Ng.

Beitr. geol. Karte Schweiz—Beiträge zur geologischen Karte der Schweiz. (Bern, 4to.) Ng. C.

Beitr. Naturk. Preuss.—Beiträge zur Naturkunde Preussens, herausgegeben von der Physikalisch-Oekonomischen Gesellschaft zu Königsberg. (Königsberg, 4to.) Ng. R. L. O.

Beitr. Pal. Oesterr.-Ung.—Beiträge zur Paläontologie Österreich-Ungarns und des Orients. (Wien, 4to.) Ng. R.

Ber. Annaberg Ver.—Bericht über den Annaberg-Buchholzer Verein für Naturkunde. (Annaberg, 8vo.) N.

Ber. deutsch. ornith. Ges.—Allgemeine deutsche ornithologische Gesellschaft zu Berlin. Bericht über die . . . Jahresversammlung. [Forms part of *J. Ornithol.*, q.v.]

Bergens Mus. Aarbog—Afhandlinger og Aarsberetning udgivne af Bergens Museum. [Consists of Afhandlinger and Aarsberetning.] (Bergen, 8vo.) N. R. L. (*C*) b, p. O.

Ber. Ges. Bamberg—Bericht der naturforschenden Gesellschaft in Bamberg. (Bamberg, 8vo.) N.

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Ertek. term. Magyar Ak.—Értekezések a természettudományok köréböl. Kiadja a Magyar tudományos Akadémia. [Dissertations, Natural Science group; published by the Magyar Academy of Sciences.] (Budapest, 8vo.) N. K. R.

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Tabl. zool.—Tablettes zoologiques publiées sous la direction de Aimé Schneider. (Poitiers, 8vo.) Nz. Z. (*C*) b. O.

Tagbl. Ges. Deutsch. Naturf.—Tagblatt der Versammlung der Gesellschaft deutscher Naturforscher und Aerzte. (Halle, &c., 4to.) N. C. O.

Termes. Füzetek—Természetrajzi Füzetek, kiadja a Magyar nemzeti Múzeum. (Budapest, 8vo.) N. Z.

Termes. Közl. Magyar Tars.—Természettudományi Közlöny . . . . kiadja a K. Magyar Termeszettudományi Társulat. [Natural Science Journal . . . Published by the R. Magyar Natural Science Society.] (Budapest, 8vo.) N.

Tijdschr. Ent.—Tijdschrift voor Entomologie, uitgeven door de Nederlandsch entomologische Vereeniging. ('s Gravenhage, 8vo.) Nz. Z. L. C.

Tijdschr. Indische Volkenk.—Tijdschrift voor Indische Taal-, Land- en Volkenkunde. (Batavia and The Hague, 8vo.) N. R. C, p.

Tijdschr. Nederland. Dierk. Ver.—Tijdschrift der Nederlandsche Dierkundige Vereeniging. (Leiden, 8vo.) Nz. L. (*C*) p. O.

Timehri—Timehri: being the Journal of the Royal Agricultural and Commercial Society of British Guiana. (Demerara, 8vo.) N. R. L.

Tr. Ac. St. Louis—The Transactions of the Academy of Science of St. Louis. (St. Louis, 8vo.) N. K. R. Z.

Tr. Albany Inst.—Transactions of the Albany Institute. (Albany, U.S., 8vo.) N. R.

Tr. Amer. ent. Soc.—Transactions of the American entomological Society. (Philadelphia, 8vo.) Nz. Z. L. C.

Tr. Amer. Micr. Soc.—Transactions of the American microscopical Society. (Buffalo, 8vo.) N.

Tr. Amer. phil. Soc.—Transactions of the American philosophical Society. (Philadelphia, 8vo.) N. R. Z. L. C, p. O.

Tr. Asiatic Soc. Japan—Transactions of the Asiatic Society of Japan. (Yokohama, 8vo.) N. R. Z. C. O.

Tr. Ass. Meriden—Proceedings and Transactions of the Scientific Association, Meriden, Conn. (Meriden, 8vo.) R.

Trav. geol. St. Petersb.—Travaux de la section géologique du cabinet de sa Majesté. (Ministère de la maison de l'Empereur) [called also Trudui geologhicheskoi chastI Kabineta imperatorskagho velichestva]. (St. Petersburg, 8vo.) Ng. R.

Trav. Inst. Lille—Travaux et Mémoires des facultés de Lille. (Lille, 8vo.) R. L. (*C*) p.

Trav. Lab. histol. France—École pratique des Hautes Études. Laboratoire d'histologie du Collège de France. (Paris, 8vo.) R. C. O.

Trav. Lab. Soie—Travaux du laboratoire d'études de la Soie. (Lyon, 8vo.)

Trav. Soc. St. Petersb.—[Includes two Zoological sections, viz., *Trudui St. Peterb. Obshch.*, and *Protok. St. Peterb. Obshch.*, qq.v.]

Trav. Soc. Univ. Kharkov.—[Vide *Trudui Kharkov. Univ.*]

Trav. Soc. Varsovie—Travaux de la Société des Naturalistes de Varsovie. Comptes-rendus de la section biologique. [Vide *Protok. Obshch. Varshav.* and *Trudui Obshch. Varshav.*]

§ *Trav. Stat. Zool. Wimereux*—Travaux de la Station zoologique de Wimereux. (Paris, 4to.) N. K. O.

Tr. Burton Soc.—Transactions of the Burton-on-Trent Natural History and Archæological Society. (London, 8vo.) N.

Tr. Cambridge Soc.—Transactions of the Cambridge philosophical Society. (Cambridge, 4to.) N. K. R. L. Z. C, p. O.

Tr. Canad. Inst.—Transactions of the Canadian Institute. (Toronto, 8vo.) N. R. L. (*C*) p.

Tr. City London Soc.—Transactions of the City of London entomological and natural history Society. (London, 8vo.) N.

Tr. Connect. Ac.—Transactions of the Connecticut Academy of Arts and Sciences. (New Haven, 8vo.) N. R. Z. L. (*C*) p. O.

Tr. Croydon Club—[Vide *P. Croydon Club.*]

Tr. Cumberland Ass.—Transactions of the Cumberland Association for the Advancement of Literature and Science. (Carlisle, 8vo.) N. L. C.

Tr. Dublin Soc.—The Scientific Transactions of the Royal Dublin Society. (Dublin, 4to.) N. K. R. Z. L. (*C*) p. O.

Tr. Dumfries Soc.—The Transactions and Journal of Proceedings of the Dumfriesshire and Galloway natural history and antiquarian Society. (Dumfries, 8vo.) N. L.

Tr. Eastbourne Soc.—Transactions of the Eastbourne natural history Society. (Eastbourne, 8vo.) N. R.

Tr. Edinb. Field Soc.—Transactions of the Edinburgh Field Naturalists' and Microscopical Society. (Edinburgh, 8vo.) N.

Tr. Edinb. geol. Soc.—Transactions of the Edinburgh geological Society. (Edinburgh, 8vo.) Ng. R. C.

Tr. E. Kent Soc.—Transactions of the East Kent natural history Society. New series. (Canterbury, 8vo.) N.

Trencsen term. Evkon.—[Vide *Jahresh. Ver. Trencsen.*]

Tr. ent. Soc. London—The Transactions of the entomological Society of London. [Includes *Proceedings.*] (London, 8vo.) Nz. R. Z. L. C, p. O.

Tr. geol. Soc. Austral.—Transactions of the geological Society of Australasia. (Melbourne, 4to.) Ng. R.

Tr. geol. Soc. Cornwall—Transactions of the Royal geological Society of Cornwall. (Penzance, 8vo.) Ng. R. C. O.

Tr. geol. Soc. Glasgow—Transactions of the geological Society of Glasgow. (Glasgow, 8vo.) Ng. C, p.

Tr. Guernsey Soc.—[Vide *Rep. Guernsey Soc.*]

Tr. Hertfordsh. Soc.—Transactions of the Hertfordshire natural history Society and Field Club. (London, 8vo.) N. R. Z. L. C.

Tr. Inverness Soc.—Transactions of the Inverness Scientific Society and Field Club. (Inverness, 8vo.) N.

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Tr. Leeds Geol. Ass.—Transactions of the Leeds Geological Association. (Leeds, 8vo.) Ng.

Tr. Leicester Soc.—Transactions of the Leicester Literary and Philosophical Society. New quarterly series. (Leicester, 8vo.) N. K. L.

Tr. Lincoln. Un.—The Transactions of the Lincolnshire Naturalists' Union. (Louth, 8vo.)

Tr. Linn. Soc. London—The Transactions of the Linnean Society of London. Second series. Zoology. (London, 4to.) Nz. K. R. Z. L. C, b, p. O.

Tr. Liverp. biol. Soc.—[Vide *P. Liverp. biol. Soc.*]

Tr. Manchester Geol. Soc.—Transactions of the Manchester Geological Society. (Manchester, 8vo.) Ng. R. C. O.

Tr. Manchester Micr. Soc.—Manchester Microscopical Society. Transactions and Annual Report. (Manchester, 8vo.) N. R.

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Tr. Northern Ass.—Transactions of the Northern Association of Literary and Scientific Societies. (Inverness, &c., 8vo.) N.

Tr. Nottingham Soc.—Nottingham Naturalists' Society. Transactions and Annual Report. (Nottingham, 12mo.) N. L.

Tr. N. York Ac.—Transactions of the New York Academy of Sciences. (New York, 8vo.) N. K. R. Z. L. (*C*) p.

Tr. N. Zealand Inst.—Transactions and Proceedings of the New Zealand Institute. (Wellington, 8vo.) N. K. R. Z. L. C, p. O.

Tromso Mus. Aarsh.—Tromsø Museums Aarshefter. (Tromsø, 8vo.) N. R.

Tr. Ottawa Club—[Vide *Ottawa Natural.*]

§ *Tr. Ottawa Soc.*—Transactions of the Ottawa Literary and Scientific Society. (Ottawa, 8vo.) (*C*) p.

Tr. Oxford Club—Transactions of the Oxford University Junior Scientific Club. (Oxford, 8vo.) N. O.

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Tr. R. Soc. Canada—Proceedings and Transactions of the Royal Society of Canada (second series). (Ottawa, 4to.) N. K. R. Z. L. C, p. O.

Tr. R. Soc. Edinb.—Transactions of the Royal Society of Edinburgh. (Edinburgh, 4to.) N. R. Z. L. C. b, p. O.

Tr. R. Soc. S Austral.—Transactions of the Royal Society of South Australia. (Adelaide, 8vo.) N. R. Z. L. (*C*) p.

Tr. R. Soc. Victoria—Transactions of the Royal Society of Victoria. (Melbourne, 4to.) N. K. R. L. C, p. O.

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Tr. Sdc. Glasgow—Transactions of the Natural History Society of Glasgow (including the proceedings of the Society). New series. (Glasgow, 8vo.) N. Z. L. C. O.

Tr. Stirling Soc.—Stirling Natural History and Archæological Society Transactions. (Stirling, 8vo.) N.

Tr. Texas Ac.—Transactions of the Texas Academy of Science. (Austin, 8vo.) N. (*C*) p.

Trudui geol. Kab.—[Vide *Trav. geol. St. Petersb.*]

Trudui geol. Kom.—Trudui geologicheskagho Komiteta. [Called also] Mémoires du comité géologique. (St. Pétersbourg, 4to.) Ng. R.

Trudui Kazan. Univ.—Trudui obshchestva estestvoispuitateleĭ prĭ imperatorskom Kazanskom Unĭversĭtetye. (Kazan, 8vo.) N.

Trudui Kharkov. Univ.—Trudui obshchestva ispuitateleĭ prĭrodui imperatorskom Kharkovskom Unĭversĭtetye. [Called also] *Trav. Soc. Univ. Kharkov.* (Kharkov, 8vo.) N. (*C*) p.

Trudui Obshch. Varshav.—Trudui obshchestva estestvoispuitateleĭ prĭ imperatorskom Varshavskom Unĭversĭtetye. [Called also] Travaux de la Société des Naturalistes de Varsovie. (Warsaw, 8vo.) N.

Trudui Russkagh. ent. Obshch. St. Peterb.—Trudui Russkagho entomologhicheskagho obshchestva v St. Peterburg [=*Horæ Soc. ent. Ross.*, q. v.].

Trudui St. Peterb. Obshch.—Trudui S.-Peterburghskagho obschchestva estestvoispuitateleĭ. Otdyelenie Zoologiĭ i Fĭsiologiĭ. [Called also] Travaux de la Société des Naturalistes de St. Pétersbourg. Section de Zoologie et de Physiologie. (St. Petersburg, 8vo.) N.

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Tr. Zool. Soc. London—Transactions of the Zoological Society of London. (London, 4to.) Nz. K. R. Z. L. C, p. O.

Tufts Coll. Stud.—Tufts College Studies. (Tufts Coll., Mass., 8vo.) Nz. R. (*C*) b, p.

Verh. Ak. Amsterdam—Verhandelingen der koninklijke Akademie van Wetenschappen. Tweede Sectie. (Amsterdam, 4to.) N. K. R. Z. L. C, p.

Verh. Anat. Ges.—Verhandlungen der anatomischen Gesellschaft [published with *Anat. Anz.*, q.v.]. Nz. K. Z. (*C*) b. O.

Verh. Berlin. Ges. Anthrop.—Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte [published with *Zeitschr. Ethnol.*]. (Berlin, 8vo.)

Verh. Deutsch. zool. Ges.—Verhandlungen der deutschen zoologischen Gesellschaft. (Leipzig, 8vo.) Nz. Z. C. O.

Verh. geol. Reichsanst.—Verhandlungen der kaiserlich-königlichen geologischen Reichsanstalt. (Wien, 8vo.) Ng. R. L. C, p. O.

Verh. Ges. Basel—Verhandlungen der naturforschenden Gesellschaft in Basel. (Basel, 8vo.) N. R. Z. L. C. O.

Verh. Ges. deutsch. Naturf.—Verhandlungen der Gesellschaft deutscher Naturforscher und Ärzte. Erster Theil, Die allgemeinen Sitzungen; Zweiter Theil, Abtheilungs-Sitzungen. (Leipzig, 8vo.) N. C. O.

Verh. Ges. Wien—Verhandlungen der k.-k. zoologisch-botanischen Gesellschaft in Wien. (Wien, 8vo.) N. K. R. Z. L. C, p. O.

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Verh. k. Leop.-Carol. Ak.—[Vide *Acta Ac. German.*]

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Verh. Siebenb. Ver.—Verhandlungen und Mittheilungen des Siebenbürgischen Vereins für Naturwissenschaften. (Hermannstadt, 8vo.) N. K. R.

Verh. Ver. Brunn—Verhandlungen des naturforschenden Vereines in Brünn. (Brünn, 8vo.) N. R. Z. L.

Verh. Ver. Hamburg naturw.—Verhandlungen des naturwissenschaftlichen Vereins in Hamburg. (Hamburg, 8vo.) N. R. Z. L. (*C*) b.

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Verh. Ver. Karlsruhe—Verhandlungen des naturwissenschaftlichen Vereins in Karlsruhe. [Consists of Sitzungsberichte and Abhandlungen.] (Karlsruhe, 8vo.) N.

Verh. Ver. Presburg—Verhandlungen des Vereins für Natur- und Heilkunde zu Presburg. [Called also] A Pozsonyi Természettudományi, és Orvosi Egyesület Közleményei. (Presburg, 8vo.) N. R.

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Verh. Ver. Stockholm—[Vide *Biol. Foren. Forh.*]

Versl. Ak. Amsterdam—Verslagen en Mededeelingen der k. Akademie van Wetenschappen. Afdeeling Natuurkunde. Derde Reeks. (Amsterdam, 8vo.) N. K. R. Z. L. C, p.

Vestnik Ceske. Nauk.—[Vide *SB. Bohmisch. Ges.*]

Victorian Natural.—The Victorian Naturalist: the Journal and Magazine of the Field Naturalists' Club of Victoria. (Melbourne, 8vo.) N. Z. C. O.

Vid. Medd.—Videnskabelige Meddelelser fra den naturhistoriske Forening i Kjøbenhavn. (Copenhagen, 8vo.) N. R. Z. C.

Vierteljahrschr. Ges. Zurich—Vierteljahrschrift der naturforschenden Gesellschaft in Zürich. (Zürich, 8vo.) N. R. Z. L. C, b, p.

Vyest. est. S. Peterb.—Vyestnīk estestvoznaniya Īzdanie S. Peterburghskagho obshchestva estestvoīspuitateleĭ. [Called also] Revue des Sciences publiée par la Société des Naturalistes à St. Pétersbourg. [St. Petersburg, 8vo.] N.

W. Amer. Scient.—The West American Scientist. (Los Angeles, &c., 8vo.) N.

§ *West Ind. Bull.*—West Indian Bulletin, the journal of the Imperial Agricultural Department for the West Indies. (Barbados, 8vo.) N. Z.

Wien. ent. Zeit.—Wiener entomologische Zeitung. (Wien, 8vo.) Nz. Z. L. C.

Wiltshire Mag.—The Wiltshire Archæological and Natural History Magazine. (Devizes, 8vo.) N.

Wiss. Meeresuntersuch.—Wissenschaftliche Meeresuntersuchungen herausgegeben von der Kommission zur wissenschaftlichen Untersuchung der deutschen Meere in Kiel und der biologischen Anstalt auf Helgoland. Neue Folge. (Kiel and Leipzig, 4to.) Nz. R. Z. L. C. O.

Wiss. Mitt. Bosnien—Wissenschaftliche Mittheilungen aus Bosnien und der Hercegovina. Herausgegeben vom Bosnisch-Hercegovinischen Landesmuseum in Sarajevo. (Vienna, 8vo.) N. Z.

Yearb. U. S. Dep. Agric.—Yearbook of the United States department of Agriculture. (Washington, 8vo.) N. R. Z. L. (*C*) b, p. O.

Zapiski imp. ak. nauk.—[Vide *Mem. Ac. St. Petersb.*]

Zapiski Kiev. Obshch.—Zapīskī Kievskagho Obshchestva estestvoīspuitateleĭ. [Called also] Mémoires de la Société des Naturalistes de Kiew. (Kiew, 8vo.) N. R. (*C*) p.

Zapiski Kharkov. Univ.—[Vide *Ann. Univ. Kharkow.*]

Zapiski Novoross. Obshch.—Zapīskī Novorossiskagho Obshchestva estestvoīspuitateleĭ. (Odessa, 8vo.) N. R. (*C*) p.

Zeitschr. ang. Mikr.—Zeitschrift für angewandte Mikroskopie herausgegeben von G. Marpmann. (Leipzig, 8vo.) N.

Zeitschr. Biol.—Zeitschrift für Biologie. (München und Leipzig, 8vo.) K. R. C, y. O.

Zeitschr. Deutsch. geol. Ges.—Zeitschrift der deutschen geologischen Gesellschaft. (Berlin, 8vo.) Ng. K. C. O.

Zeitschr. Ent. Breslau—Zeitschrift für Entomologie, herausgegeben vom Verein für Schlesische Insektenkunde zu Breslau. (Breslau, 8vo.) Nz.

Zeitschr. Ethnol.—Zeitschrift für Ethnologie. Organ der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte. (Berlin, 8vo.) C. O.

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Zeitschr. Ornith.—Zeitschrift für Ornithologie und praktische Geflügelsucht, Organ des Verbandes der ornithologischen Vereine Pommerns. (Stettin, 8vo.) Nz. Z.

Zeitschr. Sinnesorgane—Zeitschrift für Psychologie und Physiologie der Sinnesorgane. (Hamburg und Leipzig, 8vo.) R. C, y. O.

Zeitschr. wiss. Mikr.—Zeitschrift für wissenschaftliche Mikroskopie und für mikroskopische Technik. (Braunschweig, 8vo.) N. K. R. Z. C, b, y. O.

Zeitschr. wiss. Zool.—Zeitschrift für wissenschaftliche Zoologie. (Leipzig, 8vo.) Nz. K. R. Z. L. C, b, p. O.

Zool. Anz.—Zoologischer Anzeiger, zugleich Organ der deutschen zoologischen Gesellschaft. (Leipzig, 8vo.) Nz. K. R. Z. L. C, b. O.

Zool. Beitr.—Zoologische Beiträge. (Breslau, 8vo.) Nz. K. Z. L. C, b. O.

Zool. Bull.—Zoological Bulletin. (Boston, 8vo.) Nz. K. L. (*C*) b. O.

Zool. Centrlbl.—Zoologisches Centralblatt. (Leipzig, 8vo.) Nz. K. Z. (*C*) b. O.

Zool. Garten—Der Zoologische Garten. (Frankfurt-a.-M., 8vo.) Nz. Z. (*C*) p. O.

Zool. Jahrb. Anat.—Zoologische Jahrbücher. Abtheilung für Anatomie und Ontogenie der Thiere. (Jena, 8vo.) Nz. K. R. Z. L. C, b. O.

Zool. Jahrb. Syst.—Zoologische Jahrbücher. Abtheilung für Systematik, Geographie und Biologie der Thiere. (Jena, 8vo.) Nz. K. R. Z. L. C, b. O.

Zool. Jahresber.—Zoologischer Jahresbericht, herausgegeben von der zoologischen Station zu Neapel. (Berlin, 8vo.) N. K. R. Z. L. C, b. O.

Zool. Mag. Tokyo—The Zoological Magazine: organ of the Zoological Society of Tokyo. (Tokyo, 8vo.) Z.

§ *Zoologica*—Zoologica, Original—Abhandlungen aus dem Gesamtgebiete der Zoologie. Herausgegeben von Dr Carl Chun [formerly *Bibl. Zool.*]. (Stuttgart, 4to.) Nz. K. Z. L. C, b. O.

Zoologist—The Zoologist: a Monthly Journal of Natural History. (London, 8vo.) Nz. K. Z. L. C, p. O.

Zool. Rec.—The Zoological Record. (London, 8vo.) N. Nz. Ng. K. R. Z. L. C, b, p. O.

Zool. Res—Collectio brevium dissertationum novarumque investigationum ad universas zoologicas doctrinas spectantium. (Roma, 8vo.)

Zool Vortr.—Zoologische Vorträge herausgegeben von William Marshall. (Leipzig, 8vo.) Nz. Z.

An asterisk prefixed to a quotation signifies that the Recorder has not seen the journal or work referred to.

THE ZOOLOGICAL RECORD

FOR 1899.

I. GENERAL SUBJECTS.*

BY

Prof. J. ARTHUR THOMSON, M.A.

CONTENTS.

INTRODUCTION.

FOLLOWING the order of the subject-index we may first note the continuation of BRONN'S "Thierreich" (88), the progress of the new "Tierreich" (706), further instalments of zoological treatises like those of DELAGE and HÉROUARD (168) and E. PERRIER (603); also another volume of the Cam-

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* It will be understood that papers recorded here may also be found under the various classes, II—XVIII. They are included here because of their bearing on general questions, which, if not obvious, will be made apparent in the Subject-Index.

bridge Natural History (309). ERNEST THOMPSON'S "Wild Animals I have known" (759) touches the high-water mark of popular natural history. Very striking general essays are those in BROOKS' "Foundations of Zoology" (89); and the discussion of the relations of biology to other departments of thought by MACKINTOSH (491) is also important. ZITTEL'S history of geology and palæontology (856) is the most noteworthy historical contribution.

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DRIESCH'S criticism of morphological methods (180), METCHNIKOFF'S essay on senile degeneration (531), the second volume of DAVENPORT'S experimental morphology (155), BEARD'S short paper on the thymus (47), CUÉNOT'S research on excretion in Molluscs (142), GREEN'S text-book on fermentation (288), LOEB'S introduction to comparative psychology (468), and WHITMAN'S essay on "Animal Behaviour" (832), seem to the recorder to be outstanding representatives of the work noted in sections 3 and 4 of the Subject-Index.

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The general problems of organic evolution are discussed by BROOKS (89), JORDAN (380), HUTTON (367), LE DANTEC (436), and many others. Probably more important are a few contributions towards the statistical study of variation, e.g. by DAVENPORT (156), DUNCKER (189–191), KYLE (420), and the illustrations of selection supplied by BEETON & PEARSON (54) and BUMPUS (95).

I.—LIST OF TITLES.*

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II. MAMMALIA.

BY

R. LYDEKKER.

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INTRODUCTION.

THE interest of the year culminates in the description of the skin and other remains of the Patagonian Ground-Sloth (*Glossotherium*, *Grypotherium*, or *Neomylodon*); and the literature on this subject has been proportionately large. Attention may, however, be directed to MAJOR's investigations on the auditory region of the skull in *Adapis*, as well as to the description by ANDREWS of fossil mammalian remains from Egypt. Another palæontological matter of great interest is the discovery of a skull of the extinct Panda, now referred by its describer to a separate genus *Parælurus*. The identification of the problematical *Leptodon* with the *Hyracoidea*, and the discovery of other remains of the same animal are likewise satisfactory events. The description of the foot-structure of *Diprotodon* by STIRLING and ZIETZ is also a matter of considerable interest.

The investigations of HILL into the development of Marsupials have been continued, and further information with regard to the anatomy of that group and the Monotremes has appeared in the publications relating to SEMON's expedition. In this connection the recorder's proposal for an amendment in the dental formula of the Marsupials may be referred to. Attention may likewise be called to MAJOR's work on the dentition of the *Leporidæ*.

If HUBRECHT's views as to the placentation and development of *Tarsius* find acceptation, some alteration would be rendered necessary in our classification of the *Primates*. The persistence of the nucleus in the blood-corpuscles of Mammals is a subject to which the attention of several workers has been directed.

From an economic point of view much interest attaches to the American Report on Fur-Seals and Fur-Sealing, edited by JORDAN. The year has seen the completion of TROUESSART's Catalogue of Mammals; and likewise the appearance of a volume on the Distribution of the class by W. L. and P. L. SCLATER. With the exception of a reference to TULLBERG's monograph on the classification and distribution of the Rodents, systematic work on recent Mammals (which has been carried out with the usual energy) demands no special notice.

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[† *prefixed to a paragraph indicates that it relates in part, or altogether, to extinct forms: when this sign is placed before a specific name it indicates that the species referred to is an extinct one.*]

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Nyctinomus sarasinorum, Celebes, p. 16, *astrolabiensis*, Papua, p. 19, MEYER, t. c.; *minutus*, Cuba, MILLER, P. Ac. Philad. 1899, p. 173, n. spp.

Saccopteryx perspicillifer, Trinidad, MILLER, t. c. p. 176, n. sp.

Peropteryx trinitatis, Trinidad, MILLER, t. c. p. 178, n. sp.

Phyllonycteris planifrons, Bahamas, p. 34, *bombifrons*, Puerto Rico, p. 36, MILLER, P. Soc. Washington, xiii, n. spp.

Artibeus femurvillosum, Colombia, BANGS, P. New England Zool. Club, i, p. 73, n. sp.

III. *INSECTIVORA.*

TUPAIIDÆ.

Placentation, HUBRECHT, P. Zool. Congress, 1898, p. 315.

TALPIDÆ and SORICIDÆ.

Scalops machrinus intermedius, Oklahoma, ELLIOT, Field Mus. Zool. i, p. 280, n. sp.

Scapanus californicus minusculus, California, BANGS, P. New England Zool. Club, i, p. 70, n. subsp.

Neurotrichus gibbsi major, Mt. Shasta, MERRIAM, North Amer. Fauna, No. 16, p. 88, n. subsp.

†*Proscapanus*, n. g. for *Talpa sansaniensis*, Lartet, 1851, GAILLARD, Arch. Mus. Lyon, vii, p. 23.

†*Scaptonyx* †*edwardsi*, p. 29, †*dolichochir*, p. 30, Miocene, France, GAILLARD, t. c. n. spp.

†*Plesiodymus chantrei*, figured, GAILLARD, t. c. p. 33.

Sorex setosus, Washington, ELLIOT, Field Mus. Zool. i, p. 274; *personatus miscix*, Labrador, BANGS, P. New England Zool. Club, i, p. 15; *shastensis*, Mt. Shasta, MERRIAM, North Amer. Fauna, No. 16, p. 87.

Blarina brevicauda hulophaga, Indian Territory, ELLIOT, op. cit. p. 287, n. subsp.

ERINACEIDÆ.

†*Palæoerinaceus intermedius*, Miocene, France, GAILLARD, Arch. Mus. Lyon, vii, art. 2, p. 15, n. sp.

Erinaceus europæus, ova, CARLIER, J. Anat. Physiol. norm. path. xxxiii, p. 308.

IV. *CARNIVORA.*

Brain, HOLL, Arch. Anat. 1899, p. 217.

PROCYONIDÆ and MUSTELIDÆ.

Procyon psora pacifica, Cascade Mts., MERRIAM, North Amer. Fauna, No. 16, p. 107, n. subsp.

†*Parailurus*, n. g. for *Ailurus anglicus*, Dawkins, SCHLOSSER, Mt. Ungar. geol. Anstalt, xiii, p. 73; skull from Hungarian Pliocene described and figured.

Meles meles mediterraneus, Crete, BARRETT HAMILTON, Ann. Nat. Hist. (7) iv, p. 384, n. subsp.

†*Mustela foina leucolachnæa* from Crete, BARRETT HAMILTON, Ann. Nat. Hist. (7) iv, p. 383; *erminea* & *furo* hybrids, COCKS, P. Zool. Soc. London, 1899, p. 2; †*transitoria*, Miocene, France, GAILLARD, Arch. Mus. Lyon, vii, art. 2, p. 57, n. sp.

Putorius noveboracensis notius, N. Carolina, p. 53, *occisor*, Maine, p. 54, *xanthogenys mundus*, p. 56, *muricus*, p. 71, California, *longicauda oribasus*, Brit. Columbia, p. 81, BANGS, P. New England Zool. Club, i: n. spp. & subspp.

Mephitis fœtulenta, Washington, ELLIOT, Field Mus. Zool. i, p. 269, n. sp.

Spilogale olympica, Washington, ELLIOT, t. c. p. 270, n. sp.

PINNIPEDIA.

Sealing in 1898, SOUTHWELL, Zoologist (4) iii, p. 103; in California, SERRE, Bull. Soc. zool. France, xxiv, p. 166.

Phoca caspica & *grœnlandica*, note on, SMITT, Ann. Nat. Hist. (7) iv, p. 339.

Macrorhinus elephantinus, figured, Zoologist (4) iii, pl. iii.

Callorhinus alascanus, Pribiloff Islands, *curilensis*, Kurile Islands, JORDAN, Fur-Seals and Fur-Seal Islands of N. Pacific, i, p. 45 (1898), n. spp.

†CREODONTIA.

Dental formula, LYDEKKER, P. Zool. Soc. London, 1899, p. 922.

Oxyœna lupina, restoration, WORTMAN, Bull. Amer. Mus. xii, p. 140, pl. vii.

Oxyœnodon, n. g. for *O. dysodus*, n. sp., Eocene, N. America, WORTMAN, t. c. p. 145.

Pachyœna intermedia, Eocene, N. America, WORTMAN, t. c. p. 147, n. sp.

V. *RODENTIA*.

Taxonomy, phylogeny and distribution, TULLBERG, Acta Soc. Upsal. (3) 1899; the *Simplicidentata* are divided into *Hystricognathi* and *Sciurognathi*.—South African, W. L. SCLATER, Ann. S. African Mus. 1899, p. 181; development of dentition, ADLOFF, Jena. Zeitschr. 1898, p. 347.

ANOMALURIDÆ and HAPLODONTIDÆ.

Anomalurus, myology and taxonomy, PARSONS, J. Linn. Soc. London, xxvii, p. 317.

Haplodon (=*Aplodontia*) *pacifica*, Oregon, p. 19, *phæa*, California, p. 20, *olympica*, Olympic Mts., p. 20, *major rainieri*, p. 21, MERRIAM, P. Soc. Washington, xii, n. spp. & subsp.; *olympicus*, habits, ELLIOT, Field Mus. Zool. i, p. 251.

rattus in France, HECHT, Zool. Garten, xl, p. 265; *decumanus*, histology of muscles, MORPURGO, Anat. Anz. xvi, pp. 88 & 152, salivary glands, GARNIER, Bibliog. anat. vii, p. 217; *musculus*, crossing, GUAITA, Ber. Ges. Freiberg, 1898, p. 317, development, JENKINSON, Quart. J. Micr. Sci. xliii, p. 61.

Nesocia huttoni satunini, Merv, p. 108, n. subsp.; *bacheri* from Moab, p. 110, NEHRING, SB. Ges. naturf. Berlin, 1899.

Cricetus vulgaris canescens, Belgium, p. 1, *v. rufescens*, Ural, p. 2, NEHRING, SB. Ges. naturf. Berlin, 1899, n. subspp.

†*Cricetodon minus* from Œningen, MAJOR, Geol. Mag. (4) vi, p. 372.

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Rhipidomys marmosurus, Orinoco, THOMAS, Ann. Nat. Hist. (7) iii, p. 379, n. sp.

Zygodontomys stellæ, Orinoco, THOMAS, t. c. p. 380, n. sp.

Oryzomys bæops, Ecuador, iii, p. 152, *indefessus*, Galapagos, iv, p. 280, *auriventer*, Ecuador, p. 379, THOMAS, op. cit.; *navus*, Colombia, BANGS, P. Soc. Washington, xiii, p. 9; *maculiventer*, p. 204, *trichurus*, p. 206, *sanctæmartæ*, p. 207, *mollipilosus*, p. 208, *magdalenæ*, p. 209, *villosus*, p. 210, Colombia, *palmarius*, p. 210, *tenuicauda*, p. 211, *fulviventer* and *modestus*, p. 212, Venezuela, ALLEN, Bull. Amer. Mus. xii : n. spp.

Rhithrodontomys chrysotis, Oklahoma, ELLIOT, Field Mus. Zool. i, p. 281; *tenuis*, Mexico, ALLEN, Bull. Amer. Mus. xii, p. 15; *klamathensis*, Shasta Valley, MERRIAM, North Amer. Fauna, No. 16, p. 19 : n. spp.

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Rhithrodon fossor, Argentina, THOMAS, op. cit. iv, p. 280, n. sp.

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Phenacomys olympicus, Olympic Mts., ELLIOT, Field Mus. Zool. i, p. 225; *constablei*, Northwest Territory, ALLEN, Bull. Amer. Mus. xii, p. 4.

Microtus ratticeps stimmingi, Brandenburg, n. subsp., SB. Ges. naturf. Berlin, 1899, p. 58; *r. typicus* in Prussia, t. c. p. 68, *r. stimmingi* in Frankfurt, Zool. Anz. xxii, p. 358, NEHRING: *tshuktshorum*, E. Siberia, p. 11, *abbreviatus*, Hall Island, Bering Sea, p. 13, MILLER, P. Soc. Washington, xiii; *pumilus*, p. 226, *morosus*, p. 227, Olympic Mts., ELLIOT, Field Mus. Zool. i; *musignani illyricus*, Bosnia, BARRETT HAMILTON, Ann. Nat. Hist (7) iii, p. 225; *stonei*, p. 5, *vellerosus*, p. 7, *cautus*, p. 7, Northwest Territory, ALLEN, Bull. Amer. Mus. xii; *ravidulus*, Eastern Turkestan, p. 284, *pamirensis*, Tagdumbash Pamir, p. 287, *brachelix*, Kashmir, p. 290, *cricetulus*, Ladak, p. 294, *acrophilus*, Karakorum, p. 296, MILLER, P. Ac. Philad. 1899 : n. spp.

Acodon venezuelensis, Venezuela, *columbianus*, Columbia, ALLEN, Bull. Amer. Mus. xii, p. 203, n. spp.

Neotoma macropus surberi, Oklahoma, ELLIOT, Field Mus. Zool. i, p. 279; *bella*, California, BANGS, P. New England Zool. Club, i, p. 66 : n. sp. & subsp.

Synaptomys (*Mictomys*) *sphagnicola*, New Hampshire, PREBLE, P. Soc. Washington, xiii, p. 43, n. sp.

†*Myodes lemmus* †*crassidens*, Plistocene, Portugal, NEHRING, SB. Ges. naturf. Berlin, 1899, p. 56, and Arch. Naturg. 1899, i, p. 179, n. subsp.

Fiber zibethicus aquilonius, Labrador, BANGS, P. New England Zool. Club, i, p. 11, n. subsp.

zechi, Togoland, MATSCHIE, SB. Ges. naturf. Berlin, 1899, p. 11 : n. spp. & subspp.; *timidus* (=*variabilis*), change of pelage, BARRETT HAMILTON, P. Zool. Soc. London, 1899, p. 598; *cuniculus*, development of hepatic veins, PÉE, J. Anat. Physiol. xxxv, p. 133, spinal ganglia, HOLMGREN, Anat. Anz. xvi, p. 161.

Ochotona (=*Lagomys*) *cuppes*, Brit. Columbia, p. 40, *saxatilis*, Colorado, p. 41, BANGS, P. New England Zool. Club, i, n. spp.

†*Lagopsis verus* from Œningen, MAJOR, Geol. Mag. (4) vi, p. 365.

†GANODONTIA.

Wortmannia, n. g. for *Hemiganus otariidens*, Cope, HAY, Science (2) ix, p. 593; the type species of *Hemiganus* being identical with *Psittacotherium multifragum*, the former name is a synonym of the latter.

VI. *UNGULATA*.

ARTIODACTYLA.

BOVIDÆ.

The Antelopes of the Russian dominions, GREVÉ, KB. Ver. Riga, 1899, p. 94.

†*Bos banting*, habits [ANON.], Asian, Oct. 1899, p. 52; *grunniens*, notes on, KÖHLER, Zool. Garten, xl, p. 72, distribution, GREVÉ, t. c. p. 313; *bonasus*, distribution, Westberg, Arb. Ver. Riga (2) viii, p. ? ix, p. 1, in Lithuania, BUXTON, P. Zool. Soc. London, 1899, p. 64; extinct American Bisons, LUCAS, P. U. S. Mus. xxi, p. 755.

Ovibos moschatus, young figured, SCLATER, P. Zool. Soc. London, 1899, p. 986; habits, NATHORST, Svenska Jägareforeb. Nya. Tidskr. xxxviii, p. 2.

†*Ovis ammon*, young figured, SCLATER, P. Zool. Soc. London, 1899, pl. viii; *canadensis stonei* & *dalli*, range and colour, ALLEN, Bull. Amer. Mus. xii, pp. 2 & 3; *ophion urmiana*, Urmi Islands, GÜNTHER, J. Linn. Soc. London, 1899, p. 374; †*palæotragus*, p. 7, †*ambigua*, p. 19 (*Capra*), †*promaza*, Tertiary, Algeria, p. 26, POMEL, Les Ovidés, Carte Géol. Algérie—Pal. Mon. 1898 : n. spp. & subsp.

Capra mengesi, note on, NOACK, Zool. Anz. xxii, p. 13; *ibex*, distribution, GREVÉ, SB. Ges. Dorpat, xii, p. 69, horn-cores from Swiss pile-dwellings, GIRTANNER, Mt. Ges. Bern, 1897, p. 47; *ægagrus jourensis*, Journa, IVREA, P. Zool. Soc. London, 1899, p. 599, n. subsp.; *ægagrus pictus* and *æ. cretensis*, described and figured, LORENZ-LIBERNAU, Mt. Bosnien und Herzegovina, vi, p. 881.

Rupicapra ornata, Abruzzi, NEUMANN, Ann. Mus. Genova (2) xx, p. 347, n. sp.

Cephalophus leucoprosopus, Africa, NEUMANN, SB. Ges. naturf. Berlin, 1899, p. 18, n. sp.; *rufilatus*, note on, DE WINTON, P. Zool. Soc. London, 1899, p. 771, fig ; *monticola*, habits, KIRBY, t. c. p. 830.

Bubalis jacksoni, Thomas, 1892=*Acronotus lelwel*, Heuglin, 1863, NEUMANN, SB. Ges. naturf. Berlin, 1899, p. 76.

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Cervicapra arundinum, a pale specimen, LYDEKKER, P. Zool. Soc. London, 1899, p. 555.

Cobus nigricans, Sierra Leone, p. 794, pl. liii, *smithemani*, Lake Mweru, p. 982, pl. lxxi, *vardoni loderi*, Africa, p. 984, LYDEKKER, t. c.; *Adenota nigroscapulata*, White Nile, MATSCHIE, SB. Ges. naturf. Berlin, 1899, p. 15 : n. spp. & subsp.

Gazella leptoceros (=*loderi*) and *dorcas*, PEASE, P. Zool. Soc. London, 1899, p. 593; *gutturosa*, notes on, KÖHLER, Zool. Garten, xl, p. 336.
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GIRAFFIDÆ and CERVIDÆ.

Giraffa camelopardalis reticulata, Somaliland, DE WINTON, Ann. Nat. Hist. (7) iv, p. 212, n. subsp.
Period of gestation in *Cervidæ*, and its relation to antler-shedding, RÖRIG, Zool. Garten, xl, pp. 75 and 314.
Alces gigas, Alaska, MILLER, P. Soc. Washington, xiii, p. 57, n. sp.
†*Cervus canadensis asiaticus*, antlers figured, ELWES, J. Linn. Soc. London, xxvii, pp. 30 et seq.; *C. occidentalis*, description and figures of antlers, ELLIOT, Field Mus. Zool. i, p. 262; †*belgrandi* (*verticornis*) from Forest-bed, HARMER, P. Zool. Soc. London, 1899, p. 715, Tr. Zool. Soc. London, xv, p. 97, pl. xxi; †*hibernicus*, in Isle of Man, DAWKINS, Rep. Brit. Ass. 1898, p. 548.
Cervulus, sp., abnormally large antlers, HOLDING, P. Zool. Soc. London, 1899, p. 295.
†*Dicroceros* (?) *walseensis*, Tertiary, Up. Austria, TOULA, N. Jahrb. Min. suppl. vol. 1899, p. 452, n. sp.
Odocoileus herminous (Rafinesque), proper name for Black-tailed Deer, ELLIOT, Field Mus. Zool. i, p. 264.
Mazama bisulca, description, LYDEKKER, P. Zool. Soc. London, 1899, p. 917, pl. lxi.

CAMELIDÆ.

†*Lama* (=*Auchenia*) †*loennbergi*, Tertiary, Patagonia, AMEGHINO, Sinopsis, suppl. p. 6.
†*Miolabis*, n. g. for *Protolabis transmontanus*, Cope, HAY, Science (2) ix, p. 593; *Protolabis* is a synonym of *Procamelus*.

†EXTINCT FAMILIES.

Protoreodon minor, Uinta beds, SCOTT, Tr. Wagner Inst. vi, p. 95, n. sp.
Protagriocherus, n. g., p. 100, for *P. annectans*, Uinta beds, p. 107, n. sp. SCOTT, t. c.
Merycoidodon, Leidy, 1848, may stand for *Oreodon*, instead of *Cotylops*, HAY, Science (2) ix, p. 593.
Brachyodus africanus, Miocene, Egypt, ANDREWS, Geol. Mag. (4) vi, p. 482, pl. xxiii, n. sp.

SUIDÆ.

Dentition and list of extinct species, STEHLIN, Abh. Schweiz. pal. Ges. xxvi, p. 1; certain forms are named as new, but since the description of them is deferred till a later part of the memoir, they are not quoted here.
†*Sus scrofa*, corpus luteum, CLARK, Arch. Anat. 1899, p. 95; †*grivensis*=*Hyotherium soemmerringi grivense*, Depéret, 1892, GAILLARD, Arch. Mus. Lyon, vii, art. 2, p. 69.

PERISSODACTYLA.

Equus caballus & *burchelli*, hybrids, EWART (82 & 83); *caballus*, extermination in Camarque peninsula, LEVAT, Rev. Scient. (4) xii, p. 112, femoro-metatarsal tendon, BARRIER, C.R. Soc. Biol. (8) i, p. 847; *foai*, Angoniland, PRAZÁK & TROUESSART, Bull. Mus. Paris, 1899, p. 350, n. sp.; †*eöus*, HAY, Science (2) ix, p. 593, n. nom. for *intermedius*, Cope, nec Rütimeyer, 1887.

†*Onohippidium saldiasi*, Plistocene (?), Patagonia, ROTH, Rev. Mus. La Plata, ix, p. 430, n. sp.

†*Hipparion libycum*, p. 8, *massæsylium*, p. 11, *sitifensis*, p. 14, *ambiguum*, p. 15, Tertiary, Algeria, POMEL, Les Équidés Carte Géol. Algerie—Pal. Mon. 1897, n. spp.

†*Homogalax*, n. g. for *Systemodon primævus*, Cope, HAY, Science (2) ix, p. 593; the type of *Systemodon* is *Hyracotherium*.

†*Rhinoceros* †*etruscus*, osteology, REICHENBACH (270); †*antiquitatis* (=*tichorhinus*), in Belgium, LOHEST, Ann. Soc. geol. Belgique, xxvi, p. lxxiv; † sp., in Italy, PORTIS, Boll. Com. geol. Ital. xviii, p. 116.

†*Aceratherium incisivum*, its frontal horn, OSBORN, Science (2) ix, p. 161.

HYRACOIDEA, †TOXODONTIA, †LITOPTERNA, ETC.

†*Choichephilum*, n. g. for *Ch. diastematum*, n. sp. Tertiary, Patagonia, AMEGHINO, Sinopsis, Suppl. p. 5.

†*Pliohyrax*, n. g. for *P. kruppi*, n. sp., Pliocene, Samos, OSBORN, P. Zool. Congress, 1892, p. 172; identical with *Leptodon græcus*, Gaudry, SCHLOSSER, Zool. Anz. xxii, pp. 378 and 385. *Pliohyrax græcus* (*Leptodon*, Gaudry, preoccupied), MAJOR, Geol. Mag. (4) vi, p. 547.

Procavia syriaca, alimentary organs, NASONOFF, Rabot. Lab. Warsaw, 1897, p. 232; *kerstingi*, Togoland, MATSCHIE, SB. Ges. naturf. Berlin, 1899, p. 59, n. sp.

†*Nesodon impinguatus*, Tertiary, Patagonia, AMEGHINO, Sinopsis, Suppl. p. 6, n. sp.

†*Adinotherium rotundidens*, AMEGHINO, ibid. l. c. n. sp.

†*Icochilus ulter*, Tertiary, ibid. AMEGHINO, t. c. p. 5, n. sp.

†*Ameghinotherium*, n. g. for *A. curuzu-cuatiense*, n. sp., Tertiary, Corrientes, PODESTA, Escuela Positiva, v, p. i.

†*Astrapotherium trilophodon* & *hebetatum*, p. 5, *herculeum*, p. 6, Tertiary, Patagonia, AMEGHINO, Sinopsis, Suppl. n. spp.

†*Proterotherium persistens*, ibid. AMEGHINO, t. c. p. 6, n. sp.

†*Heptaconus obcattatus*, AMEGHINO, ibid. l. c. n. sp.

†*Diadiaphorus zamius*, AMEGHINO, ibid. l. c. n. sp.

†*Morphippus corrugatus*, AMEGHINO, ibid. l. c. n. sp.

†*Pyrotherium trilophodon*, ibid. AMEGHINO, t. c. p. 5, n. sp.

PROBOSCIDEA.

†*Elephas* †*antiquus* from Palermo, GREGORIO, Ann. Geol. et Pal. pt. xxvi; †*ganesa*, note on, WOODWARD, Geol. Mag. (4) vi, p. 337; *indicus*, gestation, CHAPMAN, C.R. Soc. Biol. (8) i, p. 525; *africanus*, large tusks, MACKENZIE, P. Zool. Soc. London, 1899, p. 985; †*primigenius*, in Hudson Bay territory, BELL, Bull. Geol. Soc. Amer. 1898, p. 369, in Hungary, HALAVATS, Foldtani Kozl. xxix, p. 39.

†*Mastodon*, sp., from Hudson Bay territory, BELL, Bull. Geol. Soc. Amer. 1898, p. 369, molar from Red Crag, LANKESTER, Geol. Mag. (4) vi, 289; (*Tetracaulodon*) *shepardi*, dentition, WAGNER, Kansas Quart. viii, p. 99.

VII. *SIRENIA* and *CETACEA.*

Reported former occurrence of a member of the group in St Helena, LYDEKKER, P. Zool. Soc. London, 1899, p. 796.

Hydrodamalis, Retzius, 1794, antedates *Rhytina*, Illiger, 1811, PALMER, Science (2) x, p. 494.

†*Eotheroides*, n. nom. for *Eotherium*, Owen, 1875, nec Leidy, 1853, PALMER, t. c.

†*Metaxytherium* (?) *pergense*, Tertiary, Up. Austria, TOULA, N. Jahrb. Min. suppl. vol. 1899, p. 459, n. sp.

Whaling in 1898, SOUTHWELL, Zoologist (4) iii, p. 103; origin of Cetacea, WEBER (329).

Balænoptera rostrata, stranding in Italy, CARRUCIO, Boll. Soc. Rom. Zool. viii, p. 89.

Megaptera boöps, notes on, RAWITZ, Arch. Naturg. 1900, p. 71 (1899).

Grampus griseus, on Scottish coast, TRAQUAIR, Ann. Scott. Nat. Hist. 1899, p. 197.

Delphinus delphis, rudimentary hind-flippers and milk-glands of embryo, GULDBERG, Int. J. Anat. xvi, p. 301; female urino-genital organs, BORDAS, Ann Sci. Nat. x, p. 195; histology, BOUČEK, Bull. Ceska Ak. 1898, p. 27.

Neophocæna, for *Neomeris*, Gray, 1846, nec Lamouroux, 1816, PALMER, P. Soc. Washington, xiii, p. 23. It is also stated (pp. 23 & 24) that *Orca* and *Tursio* are apparently not available for the animals to which they are usually applied.

†*Steno* †*bellardii*, note on, UGOLINI, Atti Soc. Toscana, xvii.

†*Prosqualodon australis*, skull figured, LYDEKKER, P. Zool. Soc. London, 1899, p. 919.

†*Proterocetus*, n. g. for *P. palpabilis*, n. sp., Tertiary Patagonia, AMEGHINO, Sinopsis, Suppl. p. 8.

VIII. *EDENTATA* and *EFFODIENTIA.*

Myology, WINDLE & PARSONS, P. Zool. Soc. London, 1899, pp. 314 and 990; brain, SMITH, Tr. Linn. Soc. London (2) vii, p. 277; mammary glands, EGGELING, Denk. Ges. Jena, vii, Semon's Reise, iv, p. 1.

Cyclopes, Gray, 1821, antedates *Cyclothurus*, Lesson, 1842, PALMER, P. Soc. Washington, xiii, p. 72.

Uroleptes, Wagler, 1831, antedates *Tamandua*, Lesson, 1842, PALMER, t. c. p. 73.

†*Neomylodon listai*, description of, LÖNNBERG, Svenska Exped. Magellansländ, ii, p. 149; MORENO & WOODWARD, P. Zool. Soc. London, 1899, p. 144; AMEGHINO, t. c. p. 830, and Sinopsis, Suppl. p. 8, La Pyramide, i, p. 51; MERCERAT, Comun. Mus. Buenos Aires, i, p. 155; BARRETT HAMILTON, Nat. Sci. xv, p. 462.

Identified with *Glossotherium*, MORENO, Nature, lx, p. 396, Geol. Mag. (4) vi, p. 385; *G. listai*, WOODWARD, Nat. Sci. xv, p. 351; = *Grypotherium domesticum* (n. nom.), ROTH, Rev. Mus. La Plata, ix, p. 414; histology of skin, JACOB, op. cit. x, p. 61; see also NORDENSKIÖLD, Zool. Anz. xxii, p. 335, and C.R. Ac. Paris, cxxix, p. 1216.

†*Schismotherium binum*, Tertiary, Patagonia, AMEGHINO, Sinopsis, Suppl. p. 7, n. sp.

†*Propalæohoplophorus exilis*, ibid. AMEGHINO, t. c. p. 8.

Tatoua, Gray, 1865, stands for *Xenurus*, Wagler, 1830, nec Boie, 1826, p. 2; *centralis*, Honduras, p. 4, n. sp., MILLER, P. Soc. Washington, xiii.

Cabassous, McMurtrie, 1831, antedates *Tatoua*, PALMER, t. c. p. 71.

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III. AVES.

BY

R. Bowdler Sharpe, LL.D., &c.

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No extraordinary discovery in Ornithology marks the year 1899, but much steady progress has been achieved, and some important contributions to our osteological knowledge have been made by Messrs Beddard, Pycraft and Dr Sushkin. I have to acknowledge the assistance which Mr Charles Chubb has rendered me in the preparation of this Record.

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Rissa tridactyla, pterylosis described and figured; CHAPMAN, Bull. Amer. Mus. xii, pp. 225–228.
Stercorariidæ, see FORBES & ROBINSON (220).
Stercorarius catarrhactes, in Spitsbergen; C. HARTLAUB, Ornith. Monber. vii, p. 9.
S. catarrhactes, *S. pomatorhinus*, *S. crepidatus*, *S. parasiticus*, distribution in Italy; ARRIGONI DEGLI ODDI, Ibis 1899, p. 156.

Order CHARADRIIFORMES.

Sub-order CHARADRII.

Thinocoridæ. See FORBES & ROBINSON (220).
Thinocorus orbignianus, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iv, fig. 48.
Charadriidæ. See FORBES & ROBINSON (220).
Arenaria morinella [*A. interpres*], life history in North America; PALMER, Avif. Pribilof Is. pp. 408–418.
Hæmatopus reischeki, n. sp., Kaiparu, New Zealand; W. ROTHSCHILD, Bull. B. O. C. x, pp. iv & v. *H. finschi*; MARTENS, Ornith. Monber. 1897, p. 190 = *H. longirostris*, id. l. c.
H. knudseni, figured; WILSON & EVANS, Aves Hawaiienses, pt. vii.
Hemiparra Salvadori pro *Defilippia* Salvadori nec Livy; OBERHOLSER, P. Ac. Philad. 1899, p. 202.
Zapterus, nomen emend. pro *Euhyas*, Sharpe nec Fitzinger; OBERHOLSER, P. Ac. Philad. 1899, p. 201.
Chætusia gregaria, in Co. Meath, Ireland; SAUNDERS, Bull. B. O. C. x, p. xv: in Ireland; WILLIAMS, Irish Natural. viii, pp. 233 & 234, pl. 10.
Recurvirostra avocetta, in Dorset; BAYLIS, Zoologist 1899, p. 32.
Numenius phæopus, in the Firth of Forth in winter; LAIDLAW, Ann. Scott. Nat. Hist. 1899, p. 113.
Micropalama himantopus, in Maryland; KIRKWOOD, Auk xvi, p. 76.
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G. major, in Nyasaland; SHELLEY, Ibis 1899, p. 283: near Madras; DONOVAN, J. Bombay Soc. xii, pp. 782 & 783.
G. major, Gm. = *G. media*, Lath.; OBERHOLSER, Auk xvi, p. 179.
G. delicata, notes on the breeding; DEANE, Auk xvi, pp. 270–272.
G. australis, in New Zealand; CHEESEMAN, Tr. N. Zealand Inst. xxxi, pp. 105 & 106.
Scolopax rusticula, as an Irish-breeding bird; MOFFAT, Irish Natural. viii, pp. 109–112.
S. saturata & *S. rochusseni*, specimens exhibited; W. ROTHSCHILD, Bull. B. O. C. x, p. xvi.
Crymophilus fulicarius, in Novaya Zemlya; H. J. PEARSON, Bull. B. O. C. viii, p. xxx.
Jacanidæ. See FORBES & ROBINSON (220).
Metopidius indicus, nesting near Lucknow; JESSE, Ibis 1899, pp. 350 & 351.
Actophilus, nomen emend. pro *Phyllopezus*, Sharpe nec Peters; OBERHOLSER, P. Ac. Philad. 1899, pp. 202.
Cursoriidæ. See FORBES & ROBINSON (220).
Cursorius gallicus, notes on eggs; H. KROHN, Ornith. Monber. vii, pp. 141–143; SPATZ, t. c. p. 174.
Glareola pratincola, in the Cape Verde Islands; SALVADORI, Ann. Mus. Genova (2) xx, p. 299.
Dromadidæ. See FORBES & ROBINSON (220).
Œdicnemidæ. See FORBES & ROBINSON (220).
Œdicnemus affinis, in the Gold Coast Hinterland; HARTERT, Nov. Zool. vi, p. 404.
Œ. dodsoni, n. sp., S. Arabia; GRANT, Bull. B. O. C. x, p. xix.

Sub-order OTIDES.

Otis tetrax, at Lowestoft; SOUTHWELL, Zoologist 1899, p. 31: in Aberdeenshire; WALKER, Ann. Scott. Nat. Hist. 1899, p. 51.
Houbara macqueeni in Aberdeenshire; CLARKE, Bull. B. O. C. viii, p. xxxvi: in Scotland; id. P. R. Soc. Edinb. xiv, pp. 162 & 163: id. Ann. Scott. Nat. Hist. 1899, pp. 73 & 74.

Order GRUIFORMES.

Grus grus [fossil] from the Lake-dwellings of Glastonbury, Somersetshire; ANDREWS, Ibis 1899, p. 358.
Anthropoides virgo, on the Norfolk Coast; TUCK, Zoologist 1899, p. 419.

Order STEREORNITHES.

Family PHORORHACOSIDÆ.

Phororhacos inflatus, skull and skeleton described and figured; ANDREWS, Tr. Zool. Soc. London xv, part 3, pp. 55–86, pls. xiv–xvii.

Order ARDEIFORMES.

Comatibis comata, in the Cape Verde Islands; SALVADORI, Ann. Mus. Genova (2) xx, p. 307.
Theristicus colombianus, n. sp., Colombia; FINSCH, Notes Leyd. Mus. xxi, pp. 23 & 24.
Eudocimus albus, in Panama; SALVADORI & FESTA, Boll. Mus. Torino xiv, No. 339.
Guara rubra, in Arizona; BROWN, Auk xvi, p. 270.
Platalea leucorodia, near Great Yarmouth; PATTERSON, Zoologist 1899, p. 270.
Ciconia ciconia, in Northern Germany; H. SCHALOW, Ornith. Monber. vii, p. 110: in Madeira; SCHMITZ, Ornith. Monber. vii, p. 78.
Ardea cinerea, nesting near Lucknow; JESSE, Ibis 1899, p. 351: [fossil] from the Lake-dwellings of Glastonbury, Somersetshire; ANDREWS, Ibis 1899, p. 357.
A. cærulea, in Connecticut; BROCKWAY, Auk xvi, p. 351.
Nycticorax magnifica, n. sp., Hainan; GRANT, Ibis 1899, p. 586.
N. griseus, nesting near Breslau; P. KOLLIBAY, Ornith. Monber. vii, p. 162.
Butorides virescens, breeding in Ontario; CLARKE, Auk xvi, pp. 351 & 352.
Bubulcus lucidus, in the Cape Verde Islands; SALVADORI, Ann. Mus. Genova (2) xx, p. 308.
Dupetor nesophilus, in New Hanover; HARTERT, Nov. Zool. vi, p. 215.
Botaurus stellaris, in N. Borneo; HOSE, Bull. B. O. C. x, p. xxxiii: [fossil] from the Lake-dwellings of Glastonbury, Somersetshire; ANDREWS, Ibis 1899, p. 357.

Order PHŒNICOPTERIFORMES.

Phœnicopterus roseus, in Merionethshire; HAIGH, Zoologist 1899, pp. 29 & 30.

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C. nivalis, in Co. Mayo, Ireland; R. B. SHARPE, Bull. B. O. C. x, p. xv.
Anser mentalis, n. sp., Japan; OATES, Manual Game-Birds India ii, p. 77.
A. albifrons, in Fife; BERRY, Ann. Scott. Nat. Hist. 1899, p. 182.
Branta canadensis minima, in Colorado; COOK, Auk xvi, p. 187.
Anas boscas × *Dafila acuta*; H. A. MACPHERSON, Bull. B. O. C. viii, p. xxx.
A. boscas ♂ × *Mergus merganser* ♀; KEMPEN, Ornis ix, p. 251.
Mareca penelope, plumages described and notes on the nest and eggs; BAKER, J. Bombay Soc. xii, pp. 235–242: in Indiana; DEANE, Auk xvi, p. 270.
Nettium formosum, plumages, nest, and eggs described; BAKER, J. Bombay Soc. xii, pp. 243–247. *N. crecca*, described etc.; id. t. c. pp. 247–256: in the Cape Verde Islands; SALVADORI, Ann. Mus. Genova (2) xx, p. 310. *N. albigulare*, described etc. & figured; BAKER, t. c. pp. 257–261, pl. vi.

Dafila acuta, plumages, nest, and eggs described; BAKER, J. Bombay Soc. xii, pp. 437–445.

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Marmaronetta angustirostris, figured; BAKER, J. Bombay Soc. xii, pl. vii, pp. 459–464.

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N. ferina. *N. baeri* (figured pl. viii). *N. africana*, plumages, nest, and eggs described; BAKER, J. Bombay Soc. xii, pp. 603–620.

Fuligula marila, breeding in Sutherlandshire; SAUNDERS, Bull. B. O. C. viii, p. lix: nesting in Scotland; HARVIE-BROWN, Ann. Scott. Nat. Hist. 1899, pp. 215 & 216.

Fuligula fuligula, nesting near Berlin; R. HOCKE, Ornith. Monber. vii, p. 113.

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Arctonetta fischeri, notes on the plumage; STONE, t. c. p. 471.

Somateria mollissima borealis & *S. spectabilis*, notes on the plumages; CHAPMAN, Bull. Amer. Mus. xii, pp. 231–240.

Somateria spectabilis, in the Shetlands; HARTING, Ann. Scott. Nat. Hist. 1899, p. 183: cf. t. c. pp. 111 & 112: in St Andrews Bay; HARVIE-BROWN, t. c. p. 239: *S. v-nigra*, notes on the summer moulting plumage; STONE, P. Ac. Philad. 1899, pp. 470 & 471.

Merganser squamatus, from the hills of Northern China; GRANT, Bull. B. O. C. x, p. xvii.

Merganser serrator, notes on the plumage; STONE, P. Ac. Philad. 1899, pp. 471 & 472.

Order PELECANIFORMES.

Contributions to the Osteology of the *Pygopodes*; PYCRAFT, P. Zool. Soc. London 1899, pp. 1018–1046, pl. lxxii.

Phalacrocorax eumegethes, *P. promaucanus*, nn. spp., Chile; PHILIPPI, Arch. Naturg. 1899, pp. 173 & 174.

P. nigrogularis, n. sp., Sokotra; OGILVIE-GRANT & FORBES, Bull. Liverp. Mus. II, p. 3.

P. carbo, nesting in trees; USSHER, Irish Natural. viii, pp. 186 & 187: note on the external nares; PYCRAFT, J. Linn. Soc. Zool. xxvii, pp. 207–209, figg. 1 & 2: [fossil] from the Lake-dwellings of Glastonbury, Somersetshire; ANDREWS, Ibis 1899, p. 357.

P. cirrhatus, Gm., notes on; SCHALOW, Zool. Jahrb. Suppl. iv, Heft 3, pp. 683–687: *P. magellanicus*, figured; id. t. c. pp. 681–683, Taf. 37. [Cf. SCHALOW, J. f. O. 1899, p. 289.]

P. urile, the feathers of the young described and figured; PALMER, Avif. Pribilof Islands, pp. 373–378, pls. xl & xli.

Nannopterum, n. g. Type *N. harrisi* (Rothsch.); SHARPE, Handl. B. I. p. 235.

Prophaethon, n. g. Type *P. shrubsolei*, n. sp. [fossil], London Clay of Sheppey; ANDREWS, P. Zool. Soc. London 1899, pp. 776–785, pl. li.

Phaeton candidus, in New South Wales and Lord Howe Island; NORTH, Rec. Austral. Mus. iii, pp. 89 & 90.
Pelicans in West-Jütland; HAASE, Ornith. Monber. vii, pp. 173 & 174.
Pelecanus crispus [fossil] from the Lake-dwellings of Glastonbury, Somersetshire; ANDREWS, Ibis 1899, pp. 353–356.
P. fuscus, in Wyoming; BOND, Auk xvi, p. 351.
P. fuscus, Gm. = *P. occidentalis*, Linn.; RICHMOND, Auk xvi, p. 178.

Order CATHARTIDIFORMES.

Sarcorhamphus gryphus, colour of the wattles; R. BIEDERMANN, Ornith. Monber. vii, p. 9.
Catharista urubu, Vieill. vice *C. atrata* (Bartram); COUES, Auk xvi, p. 84.
Pseudogryphus californianus, in Arizona; BROWN, Auk xvi, p. 272.

Order ACCIPITRIFORMES.

Falconidæ. See SALVIN & GODMAN (579 A).
Accipitriformes, Classification of; SUSCHKIN, Zool. Anz. xxii, pp. 500–518. General Morphology; LAFITE-DUPONT, Ac. Soc. Linn. Bord. (6) iv, pp. 289–294. Change of plumage without moult; MEERWARTH (393).
Astur palumbarius, nesting in Yorkshire; SOUTHWELL, Zoologist 1899, pp. 28 & 29: [fossil] from the Lake-dwellings of Glastonbury, Somersetshire; ANDREWS, Ibis 1899, p. 357.
A. novæ guineæ, n. sp., German New Guinea; MADARÁSZ, Ornith. Monber. vii, p. 27; id. Termes. Fuzetek xxii, p. 420, pl. xvi. [= *A. etorques*, Salvad.]
A. leucosomus, eggs described; LE SOUËF, Victorian Natural. xvi, p. 101.
A. (*Scelospizias*) *butleri*, figured; BUTLER, J. Bombay Soc. xii, pl. to p. 684.
A. sparsimfasciatus, bill and foot figured; NEUMANN, J. Ornith. 1899, p. 41: *A. tachiro*, figured; id. t. c. p. 41.
Accipiter ovampensis, from Gambaga, Gold Coast Hinterland; HARTERT, Nov. Zool. vi, p. 407.
Buteo melanostethos, n. sp., Chile; PHILIPPI, Arch. Naturg. 1899, p. 167: *B. pœcilogaster*, n. sp., Chile; id. t. c. pp. 167 & 168: *B. macronychus*, *B. ater*, nn. spp., Chile; id. t. c. p. 168; *B. pictus*, *B. albigula*, nn. spp., Chile; id. t. c. pp. 169 & 170.
B. albicaudatus sennetti, breeding in Arizona; BRENINGER, Auk xvi, p. 352.
B. desertorum, in Italy; ARRIGONI, Avicula iii, p. 127.
B. (*Asturina?*) *æthiops*, n. sp., Chile; PHILIPPI, Arch. Naturg. 1899, pp. 168 & 169: *B.* (*Asturina*) *elegans*, n. sp., Chile; id. t. c. pp. 169 & 170.
Harpyopsis novæ guineæ, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 419.
Aquila rapax, in Sardinia; ARRIGONI, Avicula iii, p. 125.
A. maculata, *A. rapax*, *A. nipalensis* and their allies; PARROT, J. Ornith. 1899, pp. 1–32.
Pithecophaga jefferyi, notes on; J. WHITEHEAD, Ibis 1899, pp. 90–92.
Butastur teesa, in Australia; NORTH, Rec. Austral. Mus. iii, No. 4, p. 87.
Haliaetus albicilla [fossil] from the Lake-dwellings of Glastonbury, Somersetshire; ANDREWS, Ibis 1899, p. 357.
Milvus ictinus [fossil] from the Lake-dwellings of Glastonbury, Somersetshire; ANDREWS, Ibis 1899, p. 357.
M. migrans, nesting in Verona; ARRIGONI DEGLI ODDI, Zoologist 1899, pp. 241–253.
M. affinis, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 418.

Baza borneensis resembles *Spizaetus alboniger*, juv.; HOSE, Bull. B. O. C. x, p. xxxiii.
Spiziapteryx circumcinctus, figured; MARTORELLI, Atti Soc. Genova x, pp. 169–175, tav. vi.
Nesierax, nomen emend. pro *Harpe*, Bonaparte nec Lacépède; OBERHOLSER, P. Ac. Philad. 1899, p. 203.
Falco sacer in East Prussia; T. S. NEHRING, Ornith. Monber. vii, p. 111.
F. eleonoræ, its plumages; O. HEINROTH, t. c. pp. 19–23.
F. fasciinucha, figured; NEUMANN, J. Ornith. 1899, pl. i.
F. regulus, Pall. = *F. merillus*, Gerini; OBERHOLSER, Auk xvi, p. 182.
F. rufigularis, its habits; GOELDI, Boll. Mus. Paraense ii, No. 4, pp. 430–442.
F. rusticolus obsoletus, in Maine; MERRILL, Auk xvi, p. 181.
Hieracidea novæ guineæ, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, pp. 419 & 420.
Tinnunculus tinnunculus, notes on; ADAMS, J. Northamptonshire Nat. Hist. Soc. 1898, pp. 45–55.
Cerchneis cenchroides, in South-western Australia; HALL, Victorian Natural. xv, p. 145.
C. alopex, from the Gold Coast Hinterland; W. ROTHSCHILD, Bull. B. O. C. viii, p. lvii: HARTERT, Nov. Zool. vi, p. 407.
Cerchneis alopex deserticola, n. subsp., Mangu, Togo Hinterland; REICHENOW, Ornith. Monber. vii, p. 190.

Order STRIGIFORMES.

Bubo mackinderi, n. sp., Mt. Kenya, Equat. Africa; SHARPE, Bull. B. O. C. x, p. xxviii.
B. ascalaphus desertorum, figured; ERLANGER, J. Ornith. 1898, Tab. xii & xiii.
Scops giu, nesting of; MEADE-WALDO, Avicult. Mag. v, pp. 159 & 160.
S. socotranus, n. sp. Sokotra; OGILVIE-GRANT & FORBES, Bull. Liverp. Mus. ii, p. 2.
S. mindorensis, n. sp., Mindoro, Philippines; WHITEHEAD, Ibis 1899, pp. 98 & 99.
S. capensis, in captivity; HAAGNER, Zoologist 1899, p. 420.
Pisorhina ugandæ, n. sp., N. Uganda; NEUMANN, J. Ornith. 1899, p. 56.
Megascops asio, notes on; BIRTWELL, Auk xvi, pp. 313–318.
Ninox plateni, n. sp., Mindoro (Blasius in litt.); HARTLAUB, Abh. Ver. Bremen xvi, pp. 270–273.
Syrnium nebulosum helveolum, n. subsp., Texas; BANGS, P. New England Zool. Club i, pp. 31 & 32.
S. woodfordi var. *suahelicum*, n. subsp., German East Africa; REICHENOW in WERTHER, Mittl. Hochl. deutsch Ost-Afrika, p. 272: *S. woodfordi zansibaricum*, n. subsp., Zanzibar; id. t. c. p. 272.
Gisella iheringi, n. sp., São Paulo, Brazil; SHARPE, Bull. B. O. C. viii, pp. xxxix, xl.
Speotyto cunicularia tolimæ, n. subsp., Plain of Tolima, Bogota; STONE, P. Ac. Philad. 1899, p. 303.
Glaucidium nanum, figured; SCHALOW, Zool. Jahrb. Suppl. iv, Heft 3, Taf. 38.
Strix flammea, notes on; ADAMS, J. Northamptonshire Nat. Hist. Soc. 1898, pp. 49 & 50, cum fig.: [fossil] from the Lake-dwellings of Glastonbury, Somersetshire; ANDREWS, Ibis 1899, p. 357.

Order PSITTACIFORMES.

Psittaci. See DUBOIS (183). Cranial Osteology of; THOMPSON, P. Zool. Soc. London 1899, pp. 9–46, figg. 1–40.

Eos variegata obiensis, n. subsp., Obi Islands; ROTHSCHILD, Bull. B. O. C. x, p. xvi.

Trichoglossus alorensis, n. sp., Alor; FINSCH, Notes Leyd. Mus. xx, p. 226.

T. rubritorquis, eggs described; LE SOUÈF, Ibis 1899, pp. 360 & 361: nest and eggs described; NORTH, Victorian Natural. xvi, p. 12.

Charmosyna atrata, figured; ROTHSCHILD, Nov. Zool. vi, pl. ii, fig. 1.

Calyptorhynchus baudini & *Callocephalon galeatum*, eggs described; LE SOUÈF, Victorian Natural. xvi, p. 102.

Cyclopsittacus diophthalmus, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 415.

Cyclopsitta macleayana (figg. 1 & 2), *C. virago* (figg. 3 & 4), *C. aruensis* (figg. 5 & 6), *C. inseparabilis* (fig. 7), heads figured; HARTERT, Nov. Zool. vi, p. 219, pl. iv.

Nasiterna viridifrons, n. sp., New Hanover; ROTHSCHILD & HARTERT, Ornith. Monber. vii, p. 138.

Pyrrhura hypoxantha, n. sp., Matto Grosso; SALVADORI, Boll. Mus. Torino xiv, No. 363.

Psittacula insularis, Ridgway is distinct from *P. cyanopyga*, Grayson; NELSON, U. S. Dept. Agric. No. 14, pp. 41 & 42.

Amazona imperialis, nomen emend. pro *Amazona augustus*, Vigors nec Shaw; RICHMOND, Auk xvi, p. 186.

A. albifrons saltuensis, n. subsp., N. W. Mexico; NELSON, P. Biol. Soc. Washington xiii, p. 26.

Graydidascalus, Bonaparte pro *Pachynus*, Reichenow nec Stål; OBERHOLSER, P. Ac. Philad. 1899, p. 203.

Poicephalus meyeri erythreæ, Bogos Land, *P. m. transvaalensis*, Transvaal, nn. subspp.; O. NEUMANN, Ornith. Monber. p. 25.

Psittacus erithacus, in Kavirondo, E. shore of Victoria Lake; NEUMANN, J. Ornith. 1899, p. 60.

Eclectus westermanni distinct from *E. riedeli*; ROTHSCHILD, Bull. B. O. C. x, pp. ii & iii.

Geoffroyus aruensis cyanicarpus, n. subsp., Rossel Isl.; HARTERT, Nov. Zool. vi, pp. 81 & 82.

G. lansbergii, n. sp., Sumbawa; FINSCH, Notes Leyd. Mus. xx, p. 225.

Palæornis salvadorii and *P. derbyana*, notes on; ROTHSCHILD, Bull. B. O. C. viii, p. lvi.

Polytelis alexandræ, figured; FULLJAMES, Avicult. Mag. v, pl. to p. 168.

Ptistes coccineopterus, nest and eggs described; LE SOUÈF, Ibis 1899, p. 360.

Psephotus chrysopterygius, notes on a living example; NORTH, Rec. Austral. Mus. iii, No. 4, pp. 87–89.

P. multicolor, in South-western Australia; HALL, Victorian Natural. xv, p. 146.

Order CORACIIFORMES.

Sub-order LEPTOSOMATI.

Leptosomatidæ, FORBES & ROBINSON (219).

Sub-order CORACIÆ.

Coraciidæ. See FORBES & ROBINSON (219).

Coracias abyssinus senegalensis distinct from true *C. abyssinicus*; REICHENOW, Ornith. Monber. vii, p. 191. *C. garrulus loquax* is the

African form of *C. garrulus*; id. t. c. p. 191. *C. weigalli* a distinct species; id. t. c. p. 191. *C. dispar* distinct from *C. spatulatus*; id. t. c. p. 191. *C. nævius sharpei*, n. subsp.; id. t. c. p. 192.

C. spatulata vel *weigalli*, in Nyasaland; SHELLEY, Ibis 1899, pp. 282 & 283.

Eurystomus australis, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 406.

Sub-order HALCYONES.

Alcedinidæ. See FORBES & ROBINSON (219).

Alcedo ispida, figured; ERLANGER, J. Ornith. 1899, Taf. xvii, fig. 1. *A. ispida spatzi*, fig. 2. *A. ispida bengalensis*, fig. 3. *A. ispida taprobana*, fig. 4.

Alcyone websteri, n. sp., New Hanover; HARTERT in CAYLEY-WEBSTER, "Through New Guinea," Appendix, p. 371: figured; id. Ibis 1899, pl. iii.

Syma torotoro tentelare, n. subsp., German New Guinea; HARTERT in CAYLEY-WEBSTER, "Through New Guinea," Appendix, p. 362.

Halcyon farquhari, n. sp., Malikolo and Espiritu Santo Is. New Hebrides. SHARPE, Bull. B. O. C. x, p. xxix.

H. elizabeth, figured; MADARÁSZ, Termes. Fuzetek xxii, p. 408.

Sub-order BUCEROTES.

Buceros rhinoceros, embryo and nestling figured; SHELFORD, Ibis 1899, pp. 539–545, pls. viii & ix: nesting-habits; HOSE, Ibis 1899, pp. 547–549.

Anthracoceros malayanus, embryo figured; SHELFORD, t. c. p. 539, pl. viii, figg. 3 & 3*a*: nestling figured, t. c. pl. x, pp. 545 & 546.

Rhytidoceros undulatus, embryo figured; id. t. c. pl. viii.

Horizocerus, n. g. Type *H. hartlaubi* (Gould); OBERHOLSER, P. U. S. Mus. xxii, p. 28.

Sub-order UPUPÆ.

Upupa epops pallida, figured (head); ERLANGER, J. Ornith. 1899, Taf. x, fig. 1. *U. epops epops*, fig. 2.

Sub-order MEROPES.

Meropidæ. See FORBES & ROBINSON (219).

Melittophagus sharpei, nom. emend. for *M. cyanostictus*, Sharpe (nec Cab.); HARTERT, Bull. B. O. C. x, pp. xxvi & xxvii.

M. gabonensis, n. subsp., Gaboon; FORBES & ROBINSON, Bull. Liverp. Mus. ii, p. 30.

Merops persicus, in Greece; REISER, J. Ornith. 1899, p. 419: figured; ERLANGER, t. c. Taf. xvi.

Sub-order MOMOTI.

Momotidæ. See FORBES & ROBINSON (219).

Sub-order CAPRIMULGI.

Eurostopus nigripennis, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iv, fig. 42.

Chordeiles virginianus sennetti, in Iowa; BARTSCH, Auk xvi, p. 86.

Lyncornis elegans, n. sp., German New Guinea; REICHENOW, Ornith. Monber. vii, p. 130.

Antrostomus goldmani, n. sp., N. W. Mexico; NELSON, P. Biol. Soc. Washington xiii, pp. 26 & 27.

Caprimulgus europæus, notes on; SELOUS, Zoologist 1899, pp. 388–402, 486–505.

C. ægyptius, in Sicily; WHITAKER, Ibis 1899, pp. 475 & 476.

C. stellatus, n. sp., Kassim R. Abyssinia; WELD BLUNDELL & LORD LOVAT, Bull. B. O. C. x, pp. xxi & xxii.

C. jonesi, n. sp., Sokotra; OGILVIE GRANT & FORBES, Bull. Liverp. Mus. ii, p. 3.

C. ruficollis desertorum, n. subsp., Tunis; ERLANGER, J. Ornith. 1899, pp. 521–525, Taf. xi, fig. 1. *C. ruficollis ruficollis*, figured; id. t. c. fig. 2. *C. ægyptius saharæ*, n. subsp., Tunis; id. t. c. pp. 525–527, Taf. xii, fig. 1. *C. ægyptius ægyptius*, figured; id. t. c. fig. 2.

Stenopsis bifasciatus, note on; ALBERT, Revist. Chilena Nat. Hist. Valparaiso iii, pp. 25 & 26.

Sub-order CYPSELI.

Macropteryx mystacea, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 405.

Collocalia fuciphaga, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 404.

Hemiprocne zonaris, notes on the myology; LUCAS, Auk xvi, pp. 77 & 78.

Panyptila cayanensis, nesting in Lower Amazonia; GOELDI, Boll. Mus. Paraense ii, No. 4, pp. 430–442 cum tab.

Cypselus apus, in the Cape Verde Islands; SALVADORI, Ann. Mus. Genova (2) xx, p. 296.

C. murinus, near Fiume; SHARPE, Bull. B. O. C. x, p. vi.

Sub-order TROCHILI.

The Hummingbirds of the Santa Marta region of Colombia; BANGS, Auk xvi, pp. 135–139, pl. ii.

Agyrtria and the allied genera, notes on; HARTERT, Ornith. Monber. vii, pp. 139–141.

A. tenebrosa, n. sp., Colombia; HARTERT, Bull. B. O. C. x, pp. xv & xvi.

Amazilis, Gray pro *Amazilia*, Reichenbach; OBERHOLSER, P. Ac. Philad. 1899, p. 206. *A. amazili*, Less. vice *pristina*, Gould; id. t. c. p. 207: *viridigastra*, Bourc. vice *viridiventris*, Reichenb.; id. t. c. p. 207.

Polytmus and allied genera, notes on; HARTERT, Ornith. Monber. vii, pp. 159 & 160.

Psilomycter, n. gen. Type *P. theresiæ* (Da Silva); id. t. c. p. 160.

Eriocnemis lugensis is the female of *E. squamata*; HARTERT, Nov. Zool. vi, p. 73.

Spathura underwoodi bricenoi, n. subsp., Merida, Venezuela; HARTERT, Nov. Zool. vi, p. 72.

Metallura smaragdinicollis septentrionalis, n. subsp., S. Peru and Bolivia; HARTERT, Nov. Zool. vi, p. 73.

M. districta, n. sp., U. S. Colombia; BANGS, P. Biol. Soc. Washington xiii, pp. 94 & 95.

Chalcostigma distinct from *Rhamphomicron*; HARTERT, Nov. Zool. vi, pp. 73 & 74.

C. ruficeps aureofastigatum, n. subsp., E. Ecuador and N. Peru; id. t. c. p. 74.

Psalidoprymna distinct from *Lesbia*, notes on the genus; id. t. c. pp. 74 & 75.

P. juliæ, n. sp., Northern Peru; HARTERT, t. c. p. 75.
Leucuria phalerata, figured; BANGS, Auk xvi, pl. ii.

Sub-order COLII.

Colius leucotis berlepschi, n. subsp., E. Africa; HARTERT in ANSORGE, "Under the African Sun," pp. 333 & 334.
C. capensis, its eggs pure white; SCLATER, Bull. B. O. C. x, p. xxxii.
C. colius damarensis, n. subsp., Damaraland; REICHENOW, J. Ornith. 1899, p. 418.

Order TROGONES.

Trogonidæ. See FORBES & ROBINSON (219).
Pharomacrus mocinno, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iv, fig. 46.
P. festatus, n. sp., U. S. Colombia; BANGS, P. Biol. Soc. Washington, xiii, pp. 92 & 93.
Pyrotrogon, Bonaparte pro *Harpactes*, Swainson nec Templeton; OBERHOLSER, P. Ac. Philad. 1899, p. 206.
P. neglectus, n. sp., Malay Peninsula; FORBES & ROBINSON, Bull. Liverp. Mus. ii, p. 34.
Harpactes yamakanensis, n. sp., Foh Kien; RICKETT, Bull. B. O. C. viii, p. xlviii.

Order COCCYGES.

Sub-order MUSOPHAGI.

Turacus finschi, n. sp., Niam Niam; REICHENOW, Ornith. Monber. vii, pp. 190 & 191.
Corythaixoides concolor pallidiceps, n. subsp., Angola; NEUMANN, J. Ornith. 1899, p. 66.

Sub-order CUCULI.

Cuculus canorus ejecting young Titlarks from a nest, photographs taken; SCHERREN, Bull. B. O. C. x, p. vi: breeding habits; WILLIAMS, Zoologist 1899, pp. 135 & 136: migration in Switzerland; FATIO, Aquila vi, pp. 97–99: time of migration in Sicily; WHITAKER, t. c. pp. 99 & 100: spring migration in Norway; LANDMARK, t. c. pp. 103–106: in the Cape Verde Islands; SALVADORI, Ann. Mus. Genova (2) xx, p. 297.
C. solitarius, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iv, fig. 43.
Cacomantis websteri, n. sp., New Hanover; HARTERT, in CAYLEY-WEBSTER'S "Through New Guinea," p. 370: ROTHSCHILD & HARTERT, Ornith. Monber. vii, p. 138.
C. insperatus, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iv, fig. 45.
C. castaneiventris, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 411: parasitic on *Sericornis magnirostris*; LE SOUËF, Ibis 1899, p. 362.
Chalcococcyx basalis, in South-western Australia; HALL, Victorian Natural. xv, pp. 145 & 146.
Coccyzus abbotti, n. sp., St Andrews; STONE, P. Ac. Philad. 1899, p. 301.
C. euleri, Cab. is distinct from *C. americanus*; STONE, Ibis 1899, pp. 476 & 477.
Centropus menebeki, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 412. *C. bernsteini*, sternum figured; id. t. c. p. 413.

C. thierryi, n. sp., Mangu, Togo Hinterland ; REICHENOW, Ornith. Monber. vii, p. 190.
Carpococcyx renauldi, figured ; OUSTALET, Arch. Mus. Paris (4) i, pl. 8.

Order SCANSORES.

Scansores. See DUBOIS (183).

Sub-order CAPITONES.

Melanobucco macclounii, n. sp., Nyasaland ; SHELLEY, Bull. B. O. C. viii, p. xxxv : Ibis 1899, p. 377.
M. torquatus congicus, n. subsp., Congo district ; REICHENOW in WERTHER, Mittl. Hochl. deutsch Ost-Afrika, p. 273.
M. leucogenys, n. sp., Konduro, Abyssinia ; WELD BLUNDELL & LORD LOVAT, Bull. B. O. C. x, p. xxi.
Tricholæma nigrifrons, n. sp., German E. Africa ; REICHENOW, J. Ornith. 1899, p. 418.
Barbatula xanthosticta, n. sp., Chellia, Abyssinia ; WELD BLUNDELL & LORD LOVAT, Bull. B. O. C. x, p. xxi.
Cyanops asiatica, its heel-pad ; PYCRAFT, op. cit. viii, p. xl.
Pan, nomen emend. pro *Tetragonops*, Jardine ; RICHMOND, Auk xvi, p. 77.

Order PICIFORMES.

Sub-order PICI.

Pici. See DUBOIS (183).
Gecinus viridis, in Ireland (correction) ; USSHER, Zoologist 1899, pp. 181 & 182.
G. vaillantii vaillantii (Taf. iv) and *G. vaillantii kœnigi*, figured ; ERLANGER, J. Ornith. 1899, Taf. iii, pp. 527–530.
G. hainanus, n. sp., Hainan ; GRANT, Ibis 1899, 584 & 585.
G. rabieri, figured ; OUSTALET, Arch. Mus. Paris (4) i, pl. 7.
Dendromus caroli arizelus, n. subsp. Liberia ; OBERHOLSER, P. U. S. Mus. xxii, pp. 29 & 30.
Chrysophlegma styani, n. sp., Hainan ; GRANT, Ibis 1899, p. 585.
Melanerpes erythrocephalus, note on ; HOLSTEIN, Auk xvi, p. 353.
Centurus nyeanus, apparently extinct in the Bahamas ; NYE, Auk xvi, p. 273.
Dendrocopus major, note on ; EVANS, Ann. Scott. Nat. Hist. 1899, pp. 47 & 48.
D. numidus numidus, notes on ; ERLANGER, J. Ornith. 1899, pp. 530–532.
Veniliornis, Bonaparte pro *Dendrobates*, Swainson nec Wagler ; OBERHOLSER, P. Ac. Philad. 1899, p. 204 : *V. peruvianus* (Taczanowski) = *Callonotus major* (Berlepsch & Taczanowski) : *V. passerinus* (Linn.) vice *tephrodops* (Wagl.) ; id. t. c. pp. 204 & 205.
Lepocestes hainanus, n. sp., Hainan ; GRANT, Ibis 1899, pp. 585 & 586.
Tiga borneonensis, figured ; DUBOIS, Synop. Av. Nouv. Man. d'Orn. Fasc. i, pl. i.
Celeus jumana, note on the nest and eggs ; SCHULZ, J. Ornith. 1899, pp. 306–308.
Mulleripicus, Bonaparte pro *Hemilophus*, Swainson nec Serville ; OBERHOLSER, P. Ac. Philad. 1899, p. 204.
Blacops, nomen emend. pro *Blax*, Reichenow nec Thompson ; RICHMOND, Auk xvi, p. 186.
Sasia everetti, male described and nest discovered ; SHELFORD, Ibis 1899, pp. 152 & 153.

Order PASSERIFORMES.

Family CORVIDÆ.

Colœus monedula × *Pica pica*, probable interbreeding; PIGOTT, Bull. B. O. C. viii, p. xl.

Corvus americanus pascuus, nomen emend. pro *C. floridanus*, Bartram; COUES, Auk xvi, p. 84.

C. corone, [fossil] from the Lake-dwellings of Glastonbury, Somersetshire; ANDREWS, Ibis 1899, p. 357.

Nucifraga macrorhyncha in Germany on migration; REICHENOW, Ornith. Monber. vii, p. 192.

Pica pica hudsonica, in California; McGREGOR, Auk xvi, pp. 78 & 79.

Urocissa whiteheadi, n. sp., Hainan; GRANT, Bull. B. O. C. x, p. xviii.

Crypsirhina varians, egg figured; NEHRKORN, Katalog Eiersamml. Taf. i, fig. 3.

Temnurus oustaleti, n. sp., Hainan; HARTLAUB, Abh. Ver. Bremen xvi, pp. 249 & 250.

Perisoreus obscurus griseus, n. subsp., Pacific States of N. America; RIDGWAY, Auk xvi, p. 255.

P. canadensis, notes on; WARREN, t. c. pp. 12–19, figg. 1–4.

Cyanocitta stelleri azteca, n. subsp., Southern Mexico; RIDGWAY, t. c. p. 256. *C. galeata*, Cabanis = *C. stelleri coronata* (Swains.); id. t. c. p. 256.

Aphlecoma grisea, n. sp., N. W. Mexico; NELSON, P. Biol. Soc. Washington, xiii, p. 27.

Aphlecoma sieberi colimæ, n. subsp., Western Mexico; NELSON, Auk xvi, p. 27. *A. sieberi potosiana*, n. subsp., Western Mexico; id. t. c. pp. 27 & 28.

Cyanocorax affinis zeledoni, n. subsp., Panama to Costa Rica; RIDGWAY, t. c. p. 255.

C. cæruleus, *C. mystacalis*, eggs figured; NEHRKORN, Katalog Eiersamml. Taf. i, figg. 1 & 2.

Cyanolyca angelæ, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 357, pp. 30 & 31.

C. mitrata, nomen emend. pro *C. ornata* (Less. nec Wagl.); RIDGWAY, Auk xvi, p. 255.

Picathartes oreas, n. sp., Mt. Victoria, Cameroons; REICHENOW, Ornith. Monber. vii, p. 40.

Family PARADISEIDÆ.

ROTHSCHILD, Das Tierreich, Liefer. 2, pp. 1–48.

Paradisea raggiana, its eggs; CROWLEY, Bull. B. O. C. viii, p. lix. [*Paradiseidæ*.]

Manucodia atra, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 389.

Family PTILONORHYNCHIDÆ.

Ptilonorhynchus violaceus, nest and eggs described; CAMPBELL, P. R. Soc. Edinb. xiv, pp. 13–19, pl. i.

Ælurœdus viridis, *Æ. maculosus*, nests and eggs described; CAMPBELL, P. R. Soc. Edinb. xiv, pp. 19–23.

Æ. geislerorum, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 390.

Chlamydodera maculata (pl. ii), *C. guttata*, *C. nuchalis* (pl. iii), *C. orientalis*, *C. cerviniventris*, nests and eggs described; CAMPBELL, P. R. Soc. Edinb. xiv, pp. 23–36.

C. guttata, nest and eggs described; NORTH, Victorian Natural. xvi, pp. 9–11.
C. nuchalis, bower, nests and eggs described; Le SOUËF, Ibis 1899, pp. 359 & 360.
Scenopœus dentirostris, notes on; CAMPBELL, P. R. Soc. Edinb. xiv, pp. 36 & 37.
Sericulus melinus, nest and eggs described; CAMPBELL, t. c. pp. 37–42, cum figg.
Prionodura newtoniana, nest and eggs described; CAMPBELL, t. c. pp. 43–46.
Cnemophilus macgregori, its egg from S. E. New Guinea; ROTHSCHILD, Bull. B. O. C. viii, p. xxvi.

Family STURNIDÆ.

Sturnus vulgaris, marked specimens, to endeavour to trace the line of migration; MORGENSEN, Ornith. Monber. vii, p. 184.
Gracula batuensis, n. sp., Batu Isl., N. W. Sumatra; FINSCH, Notes Leyd. Mus. xxi, pp. 14 & 15, Taf. ii, figg. 12–14.
Perissornis, nomen emend. pro *Dilophus*, Vieillot nec Meigen; OBERHOLSER, P. Ac. Philad. 1899, p. 216.
Sturnia erythropygia, notes on; BUTLER, J. Bombay Soc. xii, pp. 398–400.

Family EULABETIDÆ.

Pholidauges sharpei, figured; JACKSON, Ibis 1899, pl. xii.
Spreo superbus, the eggs blue, without spots; LORT PHILLIPS, Bull. B. O. C. x, p. xxxiii.
Lamprocorax, Bonaparte pro *Calornis*, Gray nec Billberg; OBERHOLSER, P. Ac. Philad. 1899, p. 215.
Pœoptera greyi, n. sp., Nandi, Equat. Africa; JACKSON, Bull. B. O. C. viii, p. l.

Family DICRURIDÆ.

Dicrurus modestus atactus, n. subsp. Fantee; OBERHOLSER, P. U. S. Mus. xxii, p. 35.
D. afer, note on; ALEXANDER, Ibis 1899, pp. 577 & 578.
Dicruropsis carbonaria, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 391.
Dissemurus alcocki, n. sp., Gorakhpur district; FINN, J. Asiat. Soc. Bengal lxviii, pp. 119–121, pl. 2.

Family ORIOLIDÆ.

Oriolus galbula, in the "Solway Area"; SERVICE, Ann. Scott. Nat. Hist. 1899, p. 182.
Oriolus andamanensis, nest and eggs described; BUTLER, J. Bombay Soc. xii, p. 396.
Oriolus meneliki, n. sp., Burka, Abyssinia; WELD BLUNDELL & LORD LOVAT, Bull. B. O. C. x, p. xix.

Family ICTERIDÆ.

Zarhynchus, nomen emend. pro *Eucorystes*, Sclater nec Bell; OBERHOLSER, P. Ac. Philad. 1899, p. 215.

Cassidix oryzivora, in confinement; PHILLIPPS, Avicult. Mag. v, pp. 19–26.
Sturnella magna argutula, n. subsp., Florida; BANGS, P. New Engl. Zool. Club i, pp. 20 & 21.
Icterus galbula, note on the new song; ROBBINS, Auk xvi, pp. 354 & 355.
Icterus auricapillus, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 30.

Family PLOCEIDÆ.

Diatropura, nomen emend. pro *Chera*, Gray nec Hübner; OBERHOLSER, P. Ac. Philad. 1899, p. 215.
Drepanoplectes jacksoni, note on; JACKSON, Ibis 1899, pp. 599 & 600.
Penthetria laticauda, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 33.
Pyromelana ansorgei, n. sp., E. Africa; HARTERT in ANSORGE, "Under the African Sun," pl. ii, fig. 2.
Ploceipasser pectoralis, note on; ALEXANDER, Ibis 1899, pp. 571 & 572.
Oreostruthus fuliginosus, figured; ROTHSCHILD, Nov. Zool. vi, pl. ii, fig. 2.
Quelea cardinalis, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 34.
Symplectes olivaceiceps, n. sp., Songea, Rovuma Valley, E. Africa; REICHENOW, Ornith. Monber. vii, p. 7.
Pytelia ansorgei, n. sp., Toru, Uganda; HARTERT, Bull. B. O. C. x, p. xxvi.
P. phœnicoptera emini, n. subsp., Lado; HARTERT, Nov. Zool. vi, p. 413.
Stizoptera, nomen emend. pro *Stictoptera*, Reichenbach nec Guenée; OBERHOLSER, P. Ac. Philad. 1899, p. 215.
Nigrita, notes on the genus; NEUMANN, Ornith. Monber. vii, pp. 62 & 63. *Atopornis diabolica* is a *Nigrita*=*N. kretschmeri*, juv. (Ornith. Monber. 1895, p. 187) and must be called *Nigrita diabolica*; id. t. c. p. 62.
Sporæginthus amandava, period of moulting; PAGE, Avicult. Mag. v, pp. 162 & 163.
S. margaritæ, n. sp. Gelongol, Abyssinia; WELD BLUNDELL & LORD LOVAT, Bull. B. O. C. x, p. xx.
Munia nigerrima, n. sp., New Hanover; ROTHSCHILD & HARTERT, Ornith. Monber. vii, p. 139.
M. pectoralis, nest and eggs described; NORTH, Victorian Natural. xvi, p. 12.
Bathilda ruficauda clarescens, n. subsp., Cape York; HARTERT, Nov. Zool. vi, p. 427.
B. ruficauda, figured; SETH-SMITH, Avicult. Mag. v, pl. to p. 64.
Poephila nigrotecta, n. sp., Cape York, N. E. Australia; HARTERT, Bull. B. O. C. viii, p. lix: notes on; id. Nov. Zool. vi, p. 426.
Erythrura forbesi from Dammar Island; HARTERT, Bull. B. O. C. viii, p. 43.
Sporopipes frontalis, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 35.
Anaplectes melanotis, note on the immature plumage; SHARPE, Ibis 1899, p. 610.
Heterhyphantes melanogaster, note on; SHARPE, Ibis 1899, p. 613.
Sycobrotus nandensis, n. sp., Nandi, East Africa; JACKSON, Ibis 1899, p. 615. *S. insignis*, note on; SHARPE, t. c. pp. 614 & 615.
Xanthophilus xanthopterus, young described; ALEXANDER, Ibis 1899, p. 573.
Ploceus rutledgii, n. sp., Naini Tal; FINN, P. Asiat. Soc. Bengal 1899, p. 77.

Family TANAGRIDÆ.

Euphonia hirundinacea, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 29.
Calliste fastuosa, note on the sexual differences; BUTLER, Zoologist 1899, pp. 325 & 326.
Piranga, names of the North American species; OBERHOLSER, Auk xvi, p. 186.
P. rubra, note on; id. t. c. p. 280: at New Providence, Bahamas; BONHOTE, Ibis 1899, p. 513.
Pyrrhocoma ruficeps, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 28.
Chlorospingus (*Hemispingus*) *canipileus*, n. sp., Venezuela; CHAPMAN, Bull. Amer. Mus. xii, pp. 153 & 154.

Family CÆREBIDÆ.

Dacnis cayana, figured; BUTLER, Avicult. Mag. v, pl. to p. 113: notes on; FULLJAMES, t. c. pp. 138 & 139.
Certhidea olivacea ridgwayi, n. subsp., Charles Isl. Galapagos; ROTHSCHILD & HARTERT, Nov. Zool. vi, p. 149.
Cyanerpes, n. g. Type *C. cyaneus* (Linn.); NELSON, Auk xvi, p. 32. [=*Cœreba*, Auct. nec Vieill.]
Cœreba cyanea, notes on the plumage; FINN, Avicult. Mag. v, p. 43.
C. cyana, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 26.
Certhiola intermedia, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 357, pp. 13 & 14.

Family DREPANIDÆ.

Himatione maculata, figured; WILSON & EVANS, Aves Hawaiienses, pt. vii.
Viridonia sagittirostris, figured; WILSON & EVANS, t. c. pt. vii.

Family FRINGILLIDÆ.

Geospiza darwini, n. sp., Culpepper Isl., Galapagos; ROTHSCHILD & HARTERT, Nov. Zool. vi, p. 158. *G. dubia simillima*, n. subsp., Charles Isl., Galapagos; iid. tom. cit. p. 161. *G. fuliginosa minor*, n. subsp., Abingdon and Bindloe Islands, Galapagos; iid. tom. cit. p. 162. *G. scandens septentrionalis*, n. subsp., Wenman and Culpepper Islands, Galapagos, iid. tom. cit. p. 165. *Geospiza*, bills figured; iid. tom. cit. pl. vi.
Zamelodia ludoviciana, figured; STONE, Auk xvi, pl. iv.
Cardinalis phœnicurus, Bp. [potius *phœniceus*] probably=*C. granadensis*, Lafr.; STONE, t. c. p. 78.
C. cardinalis affinis, *C. cardinalis sinaloensis*, nn. subsp., N. W. Mexico; NELSON, P. Biol. Soc. Washington, xiii, p. 28.
Spermophila æquatorialis, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino, No. 357, pp. 24 & 25.
Fringilla cœlebs, abnormal nest; CROWLEY, Bull. B. O. C. viii, p. xxxvi.
Astragalinus, notes on the genus; RIDGWAY, Auk xvi, pp. 79 & 80.
A. psaltria mexicanus, in Colorado; COOK, t. c. p. 187.
Chrysomitris tristis, figured; SETH-SMITH, Avicult. Mag. v, pl. to p. 125.
Spinus alleni, n. sp., S. W. Brazil; RIDGWAY, Auk xvi, p. 37.
S. pinus, nest and eggs described; MORRELL, t. c. pp. 252 & 253.
Linota rostrata, on the Tearaght-rock, Kerry; BARRINGTON, Ibis 1899, p. 159.

Rhodopiza obsoleta, egg figured: NEHRKORN, Katalog Eiersamml. Taf. iv, fig. 19.

Petronia petronia barbara, n. subsp., Tunis: ERLANGER, J. Ornith. 1899, pp. 180–185, Taf. xiii, fig. 2. *P. p. petronia*, fig. 1. *P. p. petronia*, fig. 3, *P. p. madeirensis*, fig. 4. n. subsp., Madeira: id. t. c. pp. 482 & 483.

Pyrrhula hemileucura, n. sp., Abd-el-Kuri Isl.; OGILVIE GRANT & FORBES, Bull. Liverp. Mus. ii, p. 3.

P. kiliana chierchi, n. sp., Mangu, Togo Hinterland: REICHENOW, Ornith. Monber. vii, p. 120.

P. simplex arkana, n. subsp., Sahara; ERLANGER, J. Ornith. 1899, pp. 472–476, Taf. xiv, figg. 1, 2, 4. *P. simplex simplex*, figured; id. t. c. figg. 3 & 5.

Serinus kilimensis, Richmond = *S. albifrons* (Sharpe); SHARPE, Ibis 1899, p. 622.

S. xantholeucus, Salvad. = *S. mozambicus*, Sharpe; id. Ibis 1899, p. 623.

Sporella chapmani, n. sp., Lower Amazon Valley; RIDGWAY, Auk xvi, p. 37.

Carpodacus mexicanus obscurus, McCall. pro *Carpodacus mexicanus frontalis*, Say nec Vieill.; OBERHOLSER, t. c. p. 186.

Loxia curvirostra pelzelni, figured (head); ERLANGER, J. Ornith. 1899, Taf. xv.

L. leucoptera, in Sumatra; TICEHURST, Bull. B. O. C. xiii, p. lix.

L. leucoptera, note on; WHITEHEAD, Ibis 1899, pp. 238 & 239.

HNATEK, F. Die Ammern des Weichseldeltas. Ornith. Monber. vii, pp. 172 & 173.

Hypocorys pusilla, in Holland in January; BLAAUW, Ibis 1899, pp. 330 & 331.

H. forbesi, from Ghatabuga, Gold Coast Hinterland; HARTERT, Nov. Zool. vi, p. 414.

Otocorys alaudina, n. sp., Corsica; KOENIG, Ornith. Monber. vii, p. 120.

Pyrgilauda taeniata & *P. socotrana*, n. spp., Sokotra; OGILVIE-GRANT & FORBES, Bull. Liverp. Mus. ii, p. 2.

Junco hyemalis hyemalis, its song; DOWNER, Auk xvi, pp. 355 & 356.

Junco hyemalis mutuali, n. subsp., Pacific Coast, Washington; RIDGWAY, t. c. pp. 36 & 37.

Hypoxanthus niveiceps, n. sp., U. S. Colombia; BANGS, P. Biol. Soc. Washington xiii, pp. 102 & 103.

Passerculus sandwichensis, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iv, fig. 20.

Junco mearnsi, in Colorado; COOK, Auk xvi, p. 188.

Spizella monticola mexicana, n. subsp., S. Mexico; NELSON, t. c. p. 30.

Junco oreganus, nomen. pro *Junco*; OBER, t. c. pp. 20–23.

Junco hyemalis maximus Baileyi, n. subsp., Louisiana; CHAPMAN, t. c. pp. 16–19, pl. i, fig. 1. *J. hyemalis bennetti*, figured; id. t. c. pl. i, fig. 2.

J. [illegible], note on; KOCH, t. c. pp. 277 & 278.

J. [illegible], in Ontario; SAUNDERS, t. c. p. 80.

J. [illegible], in Iowa; BARROW, t. c. pp. 276 & 277; at Toronto, Ontario; NEW, t. c. p. 277; nesting in North Dakota; ROLFE, t. c. pp. 356 & 357; [illegible] in Kentucky; HOLSTEIN, t. c. p. 356.

Melospiza fasciata, note on the song; OWEN, t. c. pp. 221–225.

M. [illegible], n. subsp., San Diego, California; RIDGWAY, t. c. p. 35.

M. [illegible], n. subsp., Alameda Co., California; id. t. c. pp. 35 & 36.

M. [illegible], n. subsp., Alaska; id. t. c. p. 36.

M. [illegible], n. subsp., California; MERRIAM, Bull. Cooper Ornith. Club x, p. 33.

M. [illegible], n. sp., Southern Mexico; NELSON, Auk xvi, pp. 28 & 29. *M. [illegible]*, n. sp., Western Mexico; id. t. c. pp. 29 & 30.

M. [illegible], nomen nuend. pro *Pyrgilauda [illegible]*, Nutt. nec [illegible]; CHAPMAN, t. c. pp. 132 & 133.

Peucæa = *Aimophila*; RIDGWAY, t. c. pp. 80 & 81.
Aimophila rufescens sinaloa, n. subsp., N. W. Mexico; RIDGWAY, t. c. pp. 254 & 255.
Passerella iliaca fuliginosa, n. subsp., British Columbia; RIDGWAY, t. c. p. 36.
Pipilo maculatus atratus, n. subsp., California; RIDGWAY, t. c. p. 254.
P. fuscus potosinus, n. subsp., Central plateau of Mexico; id. t. c. p. 254.
P. fuscus intermedius, n. subsp., N. W. Mexico; NELSON, P. Biol. Soc. Washington xiii, pp. 27 & 28.
P. fuscus carolæ, n. subsp., California; M'GREGOR, Bull. Cooper Ornith. Club i, p. 11.
Phrygilus gayi, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 31.
Arremonops superciliosa sinaloæ, n. subsp., N. W. Mexico, NELSON, P. Biol. Soc. Washington xiii, pp. 28 & 29.
Telespiza flavissima is the adult of *T. cantans*; ROTHSCHILD, Bull. B. O. C. viii, pp. lvii & lviii.

Family ALAUDIDÆ.

Alæmon duponti duponti and *A. duponti margaritæ*, figured; ERLANGER, J. Ornith. 1899, Taf. viii.
Melanocorypha yeltoniensis, notes on; PHILLIPPS, Avicult. Mag. v, pp. 169–176.
Alauda arvensis, figured; ERLANGER, J. Ornith. 1899, Taf. vi.
Calandrella brachydactyla itala, figured; ERLANGER, t. c. Taf. vii, fig. 1. *C. brachydactyla brachydactyla*, figured; id. t. c. Taf. vii, fig. 2.
Mirafra marginata, figured; HAWKER, Ibis 1899, pl. ii, fig. 2.
Mirafra erythropygia, from the Gold Coast Hinterland; ROTHSCHILD, Bull. B. O. C. viii, p. lvii.
Spilocorydon hypermetrus, note on; SHARPE, Ibis 1899, pp. 624 & 625.
Heliocorys modesta giffardi, n. subsp., Gambaga, Gold Coast; HARTERT, Bull. B. O. C. x, p. v.
Galerita, remarks on the species; HARTERT, op. cit. viii, p. xxxiv.
G. cristata, nesting near Lucknow; JESSE, Ibis 1899, p. 350.
G. thecklæ harterti, n. subsp., N. Tunis; ERLANGER, J. Ornith. 1899, pp. 332–335, Taf. ix, fig. 3: *G. cristata kleinschmidti*, n. subsp., Tunis; id. t. c. p. 345, Taf. ix, fig. 2: *G. cristata reichenowi*, n. subsp., Tunis; id. t. c. pp. 351 & 352, Taf. ix, fig. 5: *G. cristata cristata*, figured; id. t. c. Taf. ix, fig. 1: *G. thecklæ thecklæ*, figured; id. t. c. Taf. ix, fig. 1: *G. thecklæ miramaræ*, figured; id. t. c. Taf. ix, fig. 2: *G. cristata microrhyncha*, figured; id. t. c. Taf. ix, fig. 3: *G. cristata arenicola*, figured; id. t. c. Taf. ix, fig. 4: *G. thecklæ superflua*, figured; id. t. c. Taf. ix, fig. 4: *G. thecklæ deichleri*, figured; id. t. c. Taf. ix, fig. 5: *G. thecklæ carolinæ*, figured; id. t. c. Taf. ix, fig. 6: n. sp., Tunis; id. t. c. p. 339.
Ptilocorys, n. gen. Type *Alauda cristata* (Linn.); MADARÁSZ, Magyar Mad. Fuz. ii, p. 48: *P. senegalensis*, figured; id. t. c. Tab. i.

Family MOTACILLIDÆ.

Motacilla lugubris, in Aberdeenshire in winter; WILSON, Zoologist 1899, p. 268.
M. alba, in East Africa; JACKSON, Ibis, 1899, p. 625.
M. leucopsis, nest and eggs described; LA TOUCHE, Ibis, 1899, pp. 412 & 413.

M. forwordi, n. sp., Abd-el-Kuri Isl.; OGILVIE GRANT & FORBES, Bull. Liverp. Mus. ii, p. 3.
M. flava, in Cumberland; MACPHERSON, Zoologist 1899, pp. 267 & 268.
Heads of *Budytes campestris*, *B. taivanus*, *B. flavus*, *B. beema*, *B. borealis*, *B. paradoxa*, *B. feldeggii*, figured; MADARÁSZ, Magyar Mad. Fuz. ii, Tab. 2.
Anthus latistriatus, n. sp., Kavirondo, E. Africa; JACKSON, Ibis 1899, p. 628.
A. richardi, at Allonby in October; MACPHERSON, t. c. pp. 155 & 156.
A. rufulus, nesting near Lucknow; JESSE, t. c. pp. 349 & 350.
A. spraguei, in Louisiana; ALLISON, Auk xvi, p. 82.
Corydalla kiangsinensis and *Rhabdochlamys dejeani* = *Oreocorys sylvanus*; LA TOUCHE, Ibis 1899, p. 414.

Family MNIOTILTIDÆ.

Protonotaria citrea, notes on the nesting in Minnesota, illustrated by photographs; ROBERTS, Auk xvi, pp. 236–246, figg. 1–5: Life History and Distribution in Illinois; LOUCKS, Bull. Nat. Hist. Illinois, iv, pp. 10–35, with map.
Dendroica occidentalis, nesting habits; BARLOW, Auk xvi, pp. 156–161.
D. coronata, notes on its plumages; DWIGHT, t. c. pp. 217–219, pl. iii, fig. 1.
D. coronata hooveri, n. subsp., California; MCGREGOR, Bull. Cooper Ornith. Club i, p. 32.
D. kirtlandi, notes on; CHAPMAN, Auk xvi, p. 81.
Oporornis agilis, in New Providence, Bahamas; BONHOTE, Ibis 1899, p. 510.
Geothlypis trichas, odd nesting place; BROCKWAY, Auk xvi, pp. 360 & 361.
G. trichas arizela, n. subsp., Pacific Coast region, U. S. A.; OBERHOLSER, t. c. pp. 257 & 258.
G. flaviceps, n. sp., E. Mexico; NELSON, t. c. p. 31.
G. tolmiei (Townsend) is the proper name for Macgillivray's Warbler (*G. philadelphia* [Audubon]); STONE, t. c. pp. 81 & 82.
Icteria virens, notes on its plumages; DWIGHT, t. c. pp. 219 & 220, pl. iii, fig. 2.
Basileuterus bivittatus, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 27.
B. rufifrons caudatus, n. subsp., N. W. Mexico; NELSON, P. Biol. Soc. Washington xiii, p. 29.
Setophaga verticalis pallidiventris, n. subsp., Venezuela: CHAPMAN, Bull. Amer. Mus. xii, p. 153.

Family CERTHIIDÆ.

Certhia familiaris americana, name for *C. familiaris fusca*, Barton nec Gm.; OBERHOLSER, Auk xvi, p. 185.
Climacteris superciliosa, in South-western Australia; HALL, Victorian Natural. xv, p. 145.

Family MELIPHAGIDÆ.

Nests and eggs of the Honey-eaters or Meliphagous Birds of Australia; CAMPBELL, Rep. Austral. Ass. vii, pp. 578–655.
Myzomela pectoralis, nest and eggs described; LE SOUÉF, Ibis 1899, p. 361.
M. rubrocucullata, probably from the Solomon Is.; HARTERT, Nov. Zool. vi, p. 428.

Melithreptus lætior, nest and eggs described; NORTH, Victorian Natural. xvi, pp. 12 & 13.

Glyciphila notabilis, n. sp., Vanua Lava Isl.; SHARPE, Bull. B. O. C. x, p. xix.

Stigmatops blasii, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 22.

Entomyza albipennis, eggs described; LE SOUËF, Victorian Natural. xvi, pp. 101 & 102.

Ptilotis carteri, n. sp., N. W. Australia; CAMPBELL, t. c. p. 3.

P. leilavalensis, n. sp., North Queensland; NORTH, Rec. Austr. Mus. iii, No. 5, pp. 106 & 107: nest and eggs described; CAMPBELL, t. c. p. 87 & 88.

P. diops, n. sp., S. E. New Guinea; SALVADORI, Ann. Mus. Genova (2), xix, p. 581.

P. cratitia, nest and eggs described; CAMPBELL, Victorian Natural. xvi, pp. 111 & 112.

P. analoga, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 24.

Acanthogenys flavicanthus, n. sp., N. W. Australia; CAMPBELL, Victorian Natural. xvi, pp. 3 & 4.

Philemon novæ guineæ, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 23.

P. jobiensis, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 396.

Timeliopsis, Salvadori pro *Euthyrhynchus*, Schlegel nec Dallas; OBERHOLSER, P. Ac. Philad. 1899, p. 214.

Family NECTARINIIDÆ.

Nectarinia jacksoni, n. sp., Mau, E. Africa; NEUMANN, Ornith. Monber. vii, p. 24.

Cinnyris chloropygia orphogaster, n. subsp., Sotik and Victoria Nyanza district; REICHENOW, Ornith. Monber. vii, p. 169. *C. c. lühderi*, n. subsp., Cameroons & Loango; id. t. c. p. 169. *C. subalaris*, n. sp., Pondo Land; id. t. c. p. 170. *C. minullus*, n. sp., Cameroons; id. t. c. p. 170. *C. affinis stierlingi*, Uhehe, E. Africa, *C. a. niassæ*, Nyasa Land, *C. a. angolensis* (nec Less.) = *C. affinis kuanzæ* (nom. emend. p. 192), nn. subspp.; id. t. c. p. 171.

C. cyanescens, Zanzibar, *C. igneiventris*, Karagwe, *C. æquatorialis*, Victoria Nyanza, nn. spp.; REICHENOW, t. c. p. 171. *C. gutturalis damarensis*, n. subsp., Damara Land; id. t. c. p. 171. *C. kalckreuthi* distinct from *C. kirki*; id. t. c. p. 172.

C. affinis kuanzæ, n. sp., Angola; REICHENOW, Ornith. Monber. vii, p. 192 [nom. emend. pro *C. affinis angolensis*, Reichen. (nec Less.); t. c. p. 171].

C. shelleyi, n. sp., Kafui River, S. E. Africa; BOYD ALEXANDER, Bull. B. O. C. viii, p. liv: Ibis, 1899, p. 556, pl. xi. *C. gutturalis*, notes on; id. t. c. pp. 558–561.

C. ansorgei, n. sp., E. Africa; HARTERT in ANSORGE, "Under the African Sun," pp. 350 & 351, pl. ii, fig. 1.

C. fülleborni, n. sp., Kalinga, Southern German E. Africa; REICHENOW, Ornith. Monber. vii, p. 7.

C. mariquensis hawkeri, n. subsp., Somali Land; NEUMANN, Ornith. Monber. vii, p. 24. *C. hawkeri*, note on; SHARPE, Ibis 1899, p. 633.

C. sanghirensis, egg figured; NEHRKORN, Katalog Eiersamml. Taf. ii, fig. 20.

Arachnechthra asiatica, notes on change of plumage; FINN, J. Asiat. Soc. Bengal lxvii, p. 64: id. Avicult. Mag. v, pp. 41–43.

Arachnothera robusta, egg figured; NEHRKORN, Katalog Eiersamml. Taf. ii, fig. 18.

Anthothreptes celebensis, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 21.
Anthreptes idius, n. sp., Liberia; OBERHOLSER, P. U. S. Mus. xxii, p. 33.

Family DICÆIDÆ.

Pardalotus assimilis, its occurrence in Victoria; HALL, P. Linn. Soc. N. South Wales xxv, pp. 472–475.
Melanocharis bicolor, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 395.

Family ZOSTEROPIDÆ.

Zosterops jacksoni, n. sp., Mau plateau, E. Africa; NEUMANN, Ornith. Monber. vii, p. 23. *Z. scotti*, n. sp., Ruwenzori; id. t. c. p. 24: *Z. jacksoni*, note on the nesting; JACKSON, Ibis 1899, pp. 637 & 638.
Z. stierlingi, n. sp., Uhehe, German E. Africa; REICHENOW, J. Ornith. 1899, p. 418.
Z. aignani, n. sp., St Aignan Isl. Louisiades; HARTERT, Nov. Zool. vi, p. 210.
Z. westernensis vegeta, n. subsp., Cape York; id. t. c. pp. 425 & 426.
Z. chlorates (1), *Z. aureiventris* (2), *Z. griseiventris* (3), figured; ROBINSON, Bull. Liverp. Mus. ii, pl. i.

Family PARIDÆ.

Machlolophus rex, nest and eggs described; LA TOUCHE, Ibis 1899, pp. 402 & 403.
Parus baraka, n. sp., Njemps, E. Africa; JACKSON, Ibis 1899, p. 639: note on; SHARPE, t. c. pp. 639 & 640. *P. nigricinereus*, figured; JACKSON, t. c. pl. xiii.
P. minor, nest and eggs described; LA TOUCHE, t. c. p. 401.
Pœcile hypermelæna & *P. davidi*, descriptions translated; DRESSER & MORGAN, Ibis 1899, pp. 274–276.
Certhiparus ochrocephalus, egg figured; NEHRKORN, Katalog Eiersamml. Taf. ii, fig. 15.
Panurus biarmicus, notes on the nesting and distribution in Norfolk; GURNEY, Tr. Norfolk Soc. vi, pp. 429–438 with map.

Family SITTIDÆ.

Sitta sinensis, notes on; LA TOUCHE, Ibis 1899, pp. 403 & 404.
S. przewalskii, description translated; DRESSER & MORGAN, Ibis 1899, p. 276.
Aphelocephala, nomen emend. pro *Xerophila*, Gould nec Held; OBERHOLSER, P. Ac. Philad. 1899, p. 214.

Family LANIIDÆ.

Pityriasis gymnocephala, note on the egg; SHELFORD, Ibis 1899, p. 167.
Gymnorhina leuconota and *G. tibicen*, notes on; HALL, Victorian Natural. xvi, pp. 40–45.
Cracticus destructor, in South-western Australia; HALL, op. cit. xv, p. 145.
Ptererythris cralatus, nest and eggs described; LA TOUCHE, Ibis 1899, pp. 408 & 409.

Antichromus, nomen emend. pro *Bocagia*, Shelley nec Girard; RICHMOND, Auk xvi, pp. 186 & 187.

Telephonus minor, in Nyasaland; SHELLEY, Ibis 1899, p. 369.

Dryoscopus malzacii nyansæ, n. subsp., Kavirondo and Uganda; NEUMANN, J. Ornith. 1899, p. 412: *D. malzacii erythreæ*, n. subsp., Abyssinia; id. t. c. pp. 412 & 413: *D. cubla occidentalis*, n. subsp., West Africa (Angola); id. t. c. pp. 413 & 414: *D. cubla suahelicus*, n. subsp., East Africa; id. t. c. p. 414.

Cosmophoneus, n. g. Type *C. multicolor* (Gray); NEUMANN, J. Ornith. 1899, p. 392: *C. preussi*, n. sp., Cameroons; id. t. c. p. 393: *C. liberianus*, n. sp., Liberia; id. t. c. p. 393: *C. reichenowi*, n. sp., Cameroons; id. t. c. pp. 393 & 394: *C. sulphureopectus suahelicus*. n. subsp., E. Africa; id. t. c. p. 395.

Malaconotus manningi, n. sp., Nyasa Land; SHELLEY, Bull. B. O. C. viii, p. xxxv: id. Ibis 1899, pp. 369 & 370, pl. v. *Malaconotus*. A key to the species; id. t. c. pp. 372 & 373.

M. hæmatothorax, n. sp., Cameroons; NEUMANN, J. Ornith. 1899, p. 390: *M. catharoxanthus*, n. sp., N.E. Africa; id. t. c. p. 391.

Laniarius dubiosus, n. sp., Cameroons; REICHENOW, Ornith. Monber. vii, p. 130.

L. æthiopicus hybridus, n. subsp., Transvaal; NEUMANN, J. Ornith. 1899, p. 407.

L. mosambicus, note on; ALEXANDER, Ibis 1899, pp. 580–582.

Eopsaltria cucullata = *Pachycephala chlorura* ♀; WIGLESWORTH, Bull. B. O. C. viii, p. xliv. *E. caledonica* (Gm.) = ♀ *Pachycephala moratiensis*, Verr. and Des Murs, unde *Pachycephala caledonica* (Gm.); id. t. c. p. xlv.

Pachycephala melanura buruensis, n. subsp., Buru Isl., Moluccas; HARTERT, Bull. B. O. C. viii, p. xxxii. *P. peninsulæ*, n. sp., Cape York, N.E. Australia; id. t. c. p. xxxiii.

P. queenslandica, n. sp., N. Queensland; REICHENOW, Ornith. Monber. vii, p. 8.

P. finschi, n. sp., Ralum, New Pomerania; REICHENOW, t. c. vii, p. 8.

P. aurea, n. sp., German New Guinea; REICHENOW, t. c. p. 131.

P. peninsulæ, further notes on; HARTERT, Nov. Zool. vi, p. 423.

P. vandepolli, n. sp., Batu Island; FINSCH, Notes Leyden Mus. xx, pp. 224 & 225.

P. vitiensis, egg figured; NEHRKORN, Katalog Eiersamml. Taf. ii, fig. 17.

Hyloterpe homeyeri, egg figured; id. t. c. Taf. ii, fig. 19.

Lanius senator badius, and its allied subspecies, notes on; HARTERT, Nov. Zool. vi, pp. 415–418.

L. pomeranus, in Ireland; BARRINGTON, Ibis 1889, pp. 158 & 159.

L. gubernator, from the Gold Coast Hinterland; SHARPE, Bull. B. O. C. x, pp. vi & vii.

L. senator rutilans and *L. senator senator*, figured; ERLANGER, J. Ornith. 1899, Taf. ii.

L. collurio, note on the ♀; APLIN, Natural. J. viii, p. 14B, pl. B 1.

Family PRIONOPIDÆ.

Rhectes ferrugineus brevipennis, n. subsp., German New Guinea; HARTERT in CAYLEY-WEBSTER, "Through New Guinea," Appendix, p. 361.

Pseudorectes leucorhynchus, egg figured; NEHRKORN, Katalog Eiersamml. Taf. i, fig. 4.

Colluricincla tappenbecki, n. sp., German New Guinea; REICHENOW, J. Ornith. 1899, p. 118.

Clytorhynchus grisescens (Espiritu Santo) and *C. vatensis* (Vate), nn. spp., New Hebrides, SHARPE, Bull. B. O. C. x, p. xxix.

Horizorhinus, nomen emend. pro *Cuphopterus* Hartlaub nec Morawitz; OBERHOLSER, P. Ac. Philad. 1899, p. 216.
Fraseria prosphora, n. sp., Liberia; OBERHOLSER, P. U. S. Mus. xxii, p. 37.
Bradyornis silens, strange nest; ROSS, Zoologist 1899, p. 80.
Hypocolinus ampelinus, notes on; CUMMING, J. Bombay Soc. xii, pp. 760–765.
Sigmodus, notes on the genus; NEUMANN, Ornith. Monber. vii, pp. 89–91. *S. retzii nigricans*, N. Angola, *S. retzii intermedius*, Lake Tanganyika and Victoria Nyanza, nn. subspp.; id. t. c. p. 90.

Family VIREONIDÆ.

Vireo noveboracensis micrus, n. subsp., E. Mexico; NELSON, Auk xvi, p. 30.
V. philadelphicus, in West Virginia; MCLAIN, t. c. p. 359.

Family ARTAMIDÆ.

Artamus leucorhynchus parvirostris, n. subsp., Cape York; HARTERT, Nov. Zool. vi, p. 424.
A. mentalis, egg figured: NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 32.

Family AMPELIDÆ.

Phainopepla nitens, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 25.

Family SYLVIIDÆ.

Sylvia nisoria, in Oxfordshire in November; APLIN, Ibis 1899, pp. 160 & 161.
S. curruca, in the Outer Hebrides; CLARKE, P. R. Soc. Edinb. xiv. pp. 158–162: id. Ann. Scott. Nat. Hist. 1899, pp. 109 & 110: notes on; PATERSON, t. c. pp. 211—214.
S. cinerea, in Warwickshire in November; COBURN, Zoologist 1899, pp. 132 & 133.
S. undata, in Hertfordshire; CROSSMAN, Tr. Hertf. Nat. Hist. Soc. and Field Club x, pp. 33 & 34.
Phylloscopus sibilatrix flavescens, n. subsp.; ERLANGER, J. Ornith. 1899, pp. 254–256, Taf. v, figg. 1, 3: *P. sibilatrix sibilatrix*, figured; id. t. c. Taf. v, fig. 2.
P. rufus, in Warwickshire in February; COBURN, Zoologist 1899, pp. 133 & 134.
P. trochiloides, notes on, nest and eggs described; LA TOUCHE, Ibis 1899, pp. 204 & 205.
Acanthopneuste everetti, n. sp., Buru Isl. Moluccas; HARTERT, Bull. B. O. C. viii, p. xxxi.
Lusciniola abyssinica, n. sp., Chercher, Abyssinia; WELL BLUNDELL & LORD LOVAT, Bull. B. O. C. x, pp. xix & xx.
L. schwarzi, in Lincolnshire; SAUNDERS, Ibis 1899, pp. 1–4, pl. i: HAIGH, Tr. Norfolk Soc. vi, pp. 492 & 493.
Cettia sinensis, *C. brunnescens*, nests and eggs described; LA TOUCHE, Ibis 1899, pp. 207–210.
Tribura russula, notes on; id. t. c. pp. 206 & 207.
Stipiturus ruficeps, n. sp., North-west Cape (Australia); CAMPBELL, Victorian Natural. xv, p. 116: Ibis 1899, pp. 399 & 400, pl. vii.
Megalurus interscapularis distinct from *M. macrurus*: *M. punctatus*, De Vis = *M. macrurus*, juv.; ROTHSCHILD & HARTERT, Ornith. Monber. vii, p. 139.

M. ruficeps, egg figured; NEHRKORN, Katalog Eiersamml. Taf. ii, fig. 10.
Apalis viridiceps, figured; HAWKER, Ibis 1899, pl. ii, fig. 1.
Euprinodes hildegardæ, n. sp., Athi River, Masai Land; SHARPE, Bull. B. O. C. x, p. xxviii.
Neomixis, Sharpe pro *Eroessa*, Hartlaub nec Doubleday; OBERHOLSER, P. Ac. Philad. 1899, p. 211.
Sylviella pallida, n. sp., Zambesi River; BOYD ALEXANDER, Bull. B. O. C. viii, p. xlviii.
Eremomela helenoræ, n. sp., Zambesi River; BOYD ALEXANDER, t. c. pp. xlviii & xlix.
Orthotomus major, n. sp., Getemma, Abyssinia; WELD BLUNDELL & LORD LOVAT, op. cit. x, p. xx.
Phyllergates everetti dumasi, n. subsp., Buru Isl. Moluccas; HARTERT, op. cit. viii, p. xxxi.
Cisticola muelleri, n. sp., Zambesi River; BOYD ALEXANDER, t. c. p. xlix.
C. alticola, n. sp., Nyasa Land; SHELLEY, t. c. viii, p. xxxv: id. Ibis 1899, p. 373.
C. landanae, figured; PETIT, Mem. Soc. France, xii, pl. ii.
Gerygone rosseliana, n. sp., Rossel Isl. Louisiades; HARTERT, Nov. Zool. vi, p. 79.
G. rosseliana onerosa, n. subsp., St Aignan Isl. Louisiades; HARTERT, t. c. p. 209.
G. conspicillata, from Cape York; HARTERT, t. c. p. 425.
Pseudogerygone wahnesi, n. sp., Bongu, German New Guinea; MEYER, Ornith. Monber. vii, p. 144.
Chlorodyta neglecta, n. sp., Zambesi River; BOYD ALEXANDER, Bull. B. O. C. x, p. xvii.

Family TURDIDÆ.

Monograph of the *Turdidæ*, or Family of Thrushes. By HENRY SEEBOHM (edited after the author's death by R. Bowdler Sharpe), London, 1899, 4to, pts. vi & vii.
Geocichla dumasi, n. sp., Buru Isl. Moluccas; ROTHSCHILD, Bull. B. O. C. viii, p. xxx.
G. audacis, n. sp., Dammar Isl.; HARTERT, t. c. p. xliii.
G. frontalis, n. sp., Celebes; MADARÁSZ, Termes. Fuzetek xxii, pp. 111–113, pl. viii.
G. andamanensis, notes on; BUTLER, J. Bombay Soc. xii, pp. 556–557.
Turdus pilaris nesting near Dantzig; IBARSH, Ornith. Monber. vii, p. 162.
T. conradi, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 357, p. 4.
Hylocichla ustulata œdica, n. subsp., Santa Barbara, California; OBERHOLSER, Auk xvi, pp. 23–25.
Merula migratoria, its food; PERRIOR, t. c. p. 284.
M. albiventris fusa, n. subsp., U. S. Colombia; BANGS, P. Biol. Soc. Washington xiii, pp. 107 & 108.
M. javanica (Horsf.) is distinct from *M. fumida* (S. Müll.); FINSCH, Notes Leyden Mus. xx, pp. 227–230.
M. torquata, notes on; SWORD, Tr. Stirl. Nat. Hist. & Archæol. Soc. 1898 & 1899, pp. 169–170: notes on; TROLLOPE, Zoologist 1899, pp. 403–406.
M. obscura, in Tuscany; MARTORELLI, Avicula iii, p. 10.
Catharus olivascens, n. sp., N. W. Mexico; NELSON, P. Biol. Soc. Washington xiii, p. 31.
Myiadestes obscurus cinereus, n. subsp., N. W. Mexico; NELSON, P. Biol. Soc. Washington xiii, pp. 30 & 31.

Cossypha giffardi, n. sp., Gambaga, Gold Coast; HARTERT, Bull. B. O. C. x, p. v.
Bessonornis (? *Cossypha*) *gambagæ*, Gambaga, Gold Coast; HARTERT, t. c. p. v.
Cichladusa guttata, egg figured; NEHRKORN, Katalog Eiersamml. Taf. ii, fig. 12.
C. bocagei, in Nyasaland; SHELLEY, Ibis 1899, p. 374.
Erythropygia ruficauda, egg figured; NEHRKORN, Katalog Eiersamml. Taf. ii, fig. 13.
Cittocincla brevicauda, n. sp., Hainan; GRANT, Ibis 1899, p. 584.
Larvivora obscura, description translated; DRESSER & MORGAN, Ibis 1899, pp. 273 & 274.
Monticola erythrogaster, eggs described; LA TOUCHE, Ibis 1899, pp. 179 & 180.
Ruticilla titys at Allonby in October; MACPHERSON, Ibis 1899, p. 156.
Myrmecocichla dubia, n. sp., Fontaly, Abyssinia; WELD BLUNDELL & LORD LOVAT, Bull. B. O. C. x, p. xxii.
Saxicola cummingi, n. sp., Fao, Persian Gulf; WHITTAKER, t. c. p. xvii.

Family CINCLIDÆ.

Cinclus rivularis, n. sp., U. S. Colombia; BANGS, P. Biol. Soc. xiii, pp. 105 & 106.

Family TROGLODYTIDÆ.

Thryophilus leucopogon, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 357, p. 6.
Thryothorus felix pallidus, n. subsp., N. W. Mexico; NELSON, P. Biol. Soc. Washington xiii, p. 29.
Cistothorus stellaris, in Maine; KNIGHT, Auk xvi, pp. 281–283.
C. marianæ and *C. palustris griseus*, notes on; WAYNE, t. c. pp. 361 & 362.
Troglodytes monticola, n. sp., U. S. Colombia; BANGS, P. Biol. Soc. Washington, xiii, pp. 106 & 107.
T. columbiæ, n. sp., Bogota; STONE, P. Ac. Philad. 1899, p. 308.
Heleodytes stridulus, n. sp., N. W. Mexico; NELSON, P. Biol. Soc. Washington xiii, p. 30.
Pnoëpyga pusilla, nest and eggs described; LA TOUCHE, Ibis 1899, pp. 410–412.
Spelæornis souliei, n. sp., Western China; OUSTALET, Bull. Mus. Paris 1898, No. 6, pp. 257 & 258.

Family MIMIDÆ.

Mimus polyglottus in New Providence Isl. Bahamas; BONHOTE, Bull. B. O. C. viii, p. liv.

Family TIMELIIDÆ.

Grallina picata from Khoor Isl. Ke Archipelago; HARTERT, Bull. B. O. C. x, p. 5.
Myiophoneus cæruleus, nest and eggs described: LA TOUCHE, Ibis 1899, pp. 178 & 179.
Brachypteryx sinensis, *B. carolinæ*, notes on: nests and eggs described; LA TOUCHE, t. c. pp. 195–201.

Diaphorillas, nomen emend. pro *Amytis*, Lesson. nec Savigny; OBERHOLSER, P. Ac. Philad. 1899, p. 212.
Cryptillas, nomen emend. pro *Phlexis*, Hartlaub nec Erchison; OBERHOLSER, t. c. p. 211.
Nesillas, nomen emend. pro *Ellisia*, Hartlaub nec Forbes & Goodsir; OBERHOLSER, t. c. p. 211.
Sericornis sylvia, n. sp., German New Guinea; REICHENOW, J. Ornith. 1899, p. 118.
Chamæa fasciata phæa, n. subsp., Oregon; OSGOOD, P. Biol. Soc. Washington xiii, pp. 41 & 42.
Henicurus sinensis, *H. schistaceus*, nests and eggs described; LA TOUCHE, Ibis 1899, pp. 193–195.
Microcichla scouleri, nest and eggs described; id. t. c. p. 195.
Eupetes geislerorum, from British New Guinea; ROTHSCHILD, Bull. B. O. C. x, p. xxvi.
Drymaædus brunneopygius, nest and eggs; CAMPBELL, Victorian Natural. xv, pp. 130 & 131.
Psophodes nigrogularis, nest and eggs described; NORTH, op. cit. xvi, pp. 11 & 12.
Trochalopterum sukatschewi, description translated; DRESSER & MORGAN, Ibis 1899, p. 271.
T. cinereiceps, in West China; STYAN, Ibis 1899, p. 293.
T. canorum, *T. cinereiceps*, nests and eggs described; LA TOUCHE, t. c. pp. 180–182: *T. milni*, note on; id. t. c. p. 182.
T. styani, remarks on; OUSTALET, Bull. Mus. Paris 1898, No. 6, pp. 253 & 254. *T. cinereiceps*, Styan = *T. ningpoense*, David & Oustalet; id. t. c. p. 254.
Ianthocincla berthemyi, nest and eggs described; LA TOUCHE, Ibis 1899, pp. 182 & 183.
Pomatorhinus isidorii, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 394.
P. macclellandi var. *dedekensi*, Oust. and *P. macclellandi* var. *armandi*, Oust. = *P. gravivox*, David; OUSTALET, Bull. Mus. Paris 1898, No. 6, pp. 255 & 256.
P. superciliosus, notes on the plumage; HALL, Victorian Natural. xvi, pp. 89–91.
Dryonastes castanotis, n. sp., Hainan; GRANT, Ibis 1899, p. 584.
D. maësi, notes on; OUSTALET, Bull. Mus. Paris 1898, No. 6, p. 255.
Crateropus wickenburgi is *Heteropsar albicapillus*; L. VON LORENZ, Ornith. Monber. vii, p. 27.
Suthora przewalskii, description translated; DRESSER & MORGAN, Ibis 1899, pp. 271–273.
S. webbiana, notes on: nest and eggs described: LA TOUCHE, t. c. pp. 189–192.
Paradoxornis gularis, nest and eggs described; LA TOUCHE, t. c. pp. 188 & 189.
Calamanthus rubiginosus, n. sp., N. W. Australia; CAMPBELL, Victorian Natural. xvi, p. 3.
Pyctorhis gracilis, n. sp., N. W. Sechuen; STYAN, Bull. B. O. C. viii, p. xxvi.
P. gracilis = *Moupinia pœcilotis*; STYAN, Ibis 1899, p. 295.
Ortygocichla rubiginosa, egg figured; NEHRKORN, Katalog Eiersamml. Taf. ii, fig. 14.
Macronus striaticeps, egg figured; NEHRKORN, t. c. Taf. ii, fig. 16
Stachyridopsis davidi, n. sp., Setchuen; OUSTALET, Bull. Mus. Paris 1899, No. 3, p. 119.
S. ruficeps, nest and eggs described; LA TOUCHE, Ibis 1899, pp. 186 & 187.
Staphidia torqueola, nests and eggs described; LA TOUCHE, t. c. pp. 406–408.

Alcippe hueti, nest and eggs described ; La Touche, t. c. pp. 185 & 186.
Proparus fucatus, n. sp., Ichang, W. Hupih, China ; Styan, Bull. B. O. C. viii, p. xxvi : figured ; id. Ibis 1899, pl. iv, fig. 1.
P. guttaticollis, nest and eggs described ; La Touche, t. c. pp. 184 & 185.
Schœniparus variegatus, n. sp., Suiyang, Kweichow, China ; Styan, Bull. B. O. C. viii, p. xxvi : figured ; id. Ibis 1899, pl. iv, fig. 2.
Yuhina pallida, nest and eggs described ; La Touche, t. c. pp. 417–420.
Liothrix lutea, nest and eggs described ; La Touche, t. c. pp. 404–406.
Ifrita coronata, figured ; Rothschild, Nov. Zool. vi, pl. iii, fig. 1.

Family Pycnonotidæ.

Hypsipetes leucocephalus, nest and eggs described ; La Touche, Ibis 1899, p. 416.
Hemixus canipennis, nest and eggs described ; La Touche, t. c. p. 415.
Criniger chloris, egg figured ; Nehrkorn, Katalog Eiersamml. Taf. i, fig. 7.
Xenocichla, Hartl. = *Bleda*, Bp. ; Richmond, Auk xvi, pp. 183 & 184.
Xenocichla debilis, n. sp., Inhambane ; Sclater, Ibis 1899, pp. 284 & 285.
X. chlorigula, n. sp., Kalinga, Southern German E. Africa ; Reichenow, Ornith. Monber. vii, p. 8.
Eurillas, n. g. Type *E. virens* (Cassin) ; Oberholser, P. U. S. Mus. xxii, p. 15.
Andropadus lætissimus, n. sp., Nandi, Equat. Africa ; Sharpe, Bull. B. O. C. x, p. xxviii.
Stelgidillas, n. g. Type *S. gracilirostris* (Strickl.) ; Oberholser, P. U. S. Mus. xxii, p. 30.
Ixos, Temminck pro *Hemixus*, Hodgson ; Oberholser, P. Ac. Philad. 1899, p. 212.
Irena puella, egg figured ; Nehrkorn, Katalog Eiersamml. Taf. i, fig. 8.

Family Campophagidæ.

Campophaga preussi, n. sp., Mt Victoria, Cameroons ; Reichenow, Ornith. Monber. vii, pp. 40 & 41.
C. sykesi, nesting near Lucknow ; Jesse, Ibis 1899, pp. 348 & 349.
Lalage flavotincta, n. sp., Espiritu Santo, New Hebrides ; Sharpe, Bull. B. O. C. x, p. xxix.
Diaphoropterus, nomen emend. pro *Symmorphus*, Gould nec Wesmaël ; Oberholser, P. Ac. Philad. 1899, p. 214.
Pericrocotus griseigularis, nest and eggs described ; La Touche, Ibis 1899, pp. 420 & 421.

Family Muscicapidæ.

Micræca pallida, nest and eggs described ; North, Rec. Austral. Mus. iii, No. 5, p. 107.
Muscicapa nyikensis, n. sp., Nyasa Land ; Shelley, Bull. B. O. C. viii p. xxxv.
M. atricapilla speculigera, notes on ; Erlanger, J. Ornith. 1899, pp. 506 & 507.
M. parva, in Austrian Silesia ; Pohl, Ornith. Jahrb. x, pp. 192 & 193.
Erythromyias buruensis, n. sp., Buru Isl. Moluccas ; Hartert, Bull. B. O. C. viii, p. xxxi.
Muscicapula maculata, note on ; Whitehead, Ibis 1899, pp. 104 & 105.
Metabolus rugensis, egg figured ; Nehrkorn, Katalog Eiersamml. Taf. i fig. 5.

Pœcilodryas albifacies, from Cape York; HARTERT, Nov. Zool. vi, p. 424.
Hyliota barbozæ, in Nyasaland; SHELLEY, Ibis 1899, p. 375.
Rhyacornis fuliginosa, nest and eggs described; LA TOUCHE, Ibis 1899, pp. 202 & 203.
Oreicola ferrea, nest and eggs described; LA TOUCHE, t. c. pp. 201 & 202.
Parisoma jacksoni, n. sp., Mt Elgon, Equat. Africa; SHARPE, Bull. B. O. C. x, p. xxviii.
Hypothymis occipitalis, egg figured; NEHRKORN, Katalog Eiersamml. Taf. i, fig. 6.
Rhipidura sancta, n. sp., Espiritu Santo, New Hebrides; SHARPE, Bull. B. O. C. x, p. xxix.
R. superflua, n. sp., Buru Isl. Moluccas; HARTERT, op. cit. viii, p. xxxii.
R. louisiadensis, n. sp., Rossel Isl. Louisiades; HARTERT, Nov. Zool. vi, p. 78.
R. albifrontata, notes on the nesting; JESSE, Ibis 1899, p. 349.
R. leucothorax, figured; MADARÁSZ, Termes. Fuzetek xxii, pl. xv.
R. dahli, figured; REICHENOW, Mt. Mus. Berlin 1899, Bd. I, Heft 3, Taf. 2, fig. 2. *R. setosa*, nest figured; id. t. c. fig. 3.
R. albicauda, nest and eggs described; NORTH, Victorian Natural. xvi, p. 11.
Zeocephus cyanescens, egg figured; NEHRKORN, Katalog Eiersamml. Taf. ii, fig. 9.
Terpsiphone perspicillata suahelica, n. subsp., East Africa; REICHENOW in WERTHER, Mittl. Hochl. deutsch Ost-Afrika, p. 275. *T. plumbeiceps*, n. sp. ? ; REICHENOW, t. c. p. 275.
Drymophila, Temminck pro *Philentoma*, Eyton; OBERHOLSER, P. Ac. Philad. 1899, p. 213.
Myiagra novæpomeraniæ, n. sp., Ralum, New Pomerania; REICHENOW, Ornith. Monber. vii, p. 8: figured; id. Mt. Mus. Berlin 1899, Bd. i, Heft 3, Taf. 2, fig. 1.
Cryptolopha ricketti sinensis & *C. fulvifacies*, nests and eggs described; LA TOUCHE, Ibis 1899, pp. 426–429.
Piezorhynchus nigrimentum, egg figured; NEHRKORN, Katalog Eiersamml. Taf. ii, fig. 11.
Dammeria, n. gen. Type *D. henrici*, n. sp., Dammer Isl. Banda Sea; HARTERT, Bull. B. O. C. viii, pp. lvii & lviii.
Peltops blainvillii, sternum figured; MADARÁSZ, Termes. Fuzetek xxii, p. 402.
Siphia styani, n. sp., Hainan; HARTLAUB, Abh. Ver. Bremen xvi, pp. 248 & 249.
S. brunneata, notes on; LA TOUCHE, Ibis 1899, pp. 422 & 423.
Stizorhina, nomen emend. pro *Cassinia*, Hartlaub nec Rafinesque; OBERHOLSER, P. Ac. Philad. 1899, p. 213.

Family HIRUNDINIDÆ.

See DUGÈS, O. (180).
Chelidon urbica orientalis, n. subsp., Uda R. Charkow, Russia; SOMOW, Ornith. Faun. Gouv. Charkow, 1897, p. 650: HÄRMS, Ornith. Monber. vii, p. 93 [translation]; v. TSCHUSI, t. c. p. 112.
C. cashmiriensis, notes on nesting habits; LA TOUCHE, Ibis 1899, pp. 430 & 431.
Clivicola vice *Riparia*; OBERHOLSER, Auk xvi, p. 281.
Hirundo rustica, in late autumn and winter; HOMEYER, Ornith. Monber. vii, pp. 1–3.
H. poucheti, figured; PETIT, Mem. Soc. France xii, pl. i.
Petrochelidon rufigula, from Gambaga, Gold Coast Hinterland; HARTERT, Nov. Zool. vi, p. 422.

Petrochelidon lunifrons, very early record; COUES, Auk xvi, p. 359.
Psalidoprocne percivali, n. sp., Ruo River, S.E. Africa; OGILVIE GRANT, Bull. B. O. C. viii, p. lv.
P. blanfordi, n. sp., Bilo, Abyssinia; WELD BLUNDELL & LORD LOVAT, Bull. B. O. C. x, p. xx.

Family TYRANNIDÆ.

Ochthodiæta pernix, n. sp., U. S. Colombia; BANGS, P. Biol. Soc. Washington xii, pp. 95 & 96.
Octhœca citrinifrons, Sclater, probably = *O. frontalis* (Lafr.); STONE, Auk xvi, p. 78.
Mecocerculus nigriceps, *M. urichi*, nn. spp., Venezuela; CHAPMAN, Bull. Amer. Mus. xii, pp. 154–156.
Lophotriccus squamicristatus, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 36.
Hapalocercus paulus, n. sp., U. S. Colombia; BANGS, P. Biol. Soc. Washington xiii, p. 96.
Myiopatis montensis, n. sp., U. S. Colombia; BANGS, t. c. xiii, pp. 97 & 98.
Myiobius cinnamomeus, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iii, fig. 37.
Elainea cinereifrons; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 362, p. 8.
Pseudomyiobius, n. g. Type *P. annectens*, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 362, p. 12.
Pyrocephalus dubius, confined to Chatham Isl. Galapagos, and distinct from *P. nanus*; ROTHSCHILD, Bull. B. O. C. viii, p. lvii.
Myiochanes nigrescens, Scl. and Salv., is a *Blacicus*; OBERHOLSER, Auk xvi, p. 337.
Nuttallornis, subgenus, Ridgway is of generic rank, Type *N. borealis* (Swains.); OBERHOLSER, t. c. p. 331.
Horizopus, nomen emend. pro *Contopus*, Cabanis nec Marseul; OBERHOLSER, t. c. p. 331.
H. sordidulus (Sclater) = *H. richardsonii* (Swainson); OBERHOLSER, t. c. p. 333.
Blacicus depressirostris or *Blacicus andinus depressirostris*, a name proposed for the Central American form; OBERHOLSER, t. c. p. 337.
Blacicus barbirostris, Swainson is a *Myiarchus*; OBERHOLSER, t. c. p. 330.

Family PIPRIDÆ.

Xenopipo subalaris, n. sp., Peru; GODMAN, Bull. B. O. C. x, p. xxvii.
Antilophia, Reichenbach pro *Metopia*, Swainson nec Meigen; OBERHOLSER, P. Ac. Philad. 1899, p. 209.
Chiromachæris manacus, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iv, fig. 38.
Manacus manacus abditivus, n. subsp., Colombia; BANGS, P. New England Zool. Club i, pp. 35 & 36: *M. manacus purus*, n. subsp., Lower Amazonia; id. t. c. p. 36.

Family COTINGIDÆ.

Scotothorus, nomen emend. pro *Heteropelma*, Bonaparte nec Wesmaël; OBERHOLSER, P. Ac. Philad. 1899, p. 208.
Pachyrhamphus xanthogenys, n. sp., Eastern Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xiii, No. 330 (1898).
P. major uropygialis, n. subsp., N.W. Mexico; NELSON, Auk xvi, p. 28.

P. salvini, nomen emend. pro *Pachyrhamphus similis*, Salvin nec Cherrie; RICHMOND, t. c. p. 186.
P. niger, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iv, fig. 40.
Attila citriniventris, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iv, 39.
Pipreola aureipectus decora, n. subsp., U.S. Colombia; BANGS, P. Biol. Soc. Washington xiii, p. 98.
Perissocephalus, nomen emend. pro *Gymnocephalus*, Geoffroy St Hilaire nec Bloch and Schneider; OBERHOLSER, P. Ac. Philad. 1899, p. 209.
Chasmorhynchus niveus, note on; SCLATER, P. Zool. Soc. London 1899, pp. 712 & 713.

Family PITTIDÆ.

Mellopitta gigantea, n. sp., Mt Maori, N. New Guinea; ROTHSCHILD, Ornith. Monber. vii, p. 137.
Review of the red-bellied section of the genus *Pitta*; ROTHSCHILD, t. c. pp. iii & iv.
Pitta cærulea, nesting in N. Borneo; HOSE, Bull. B. O. C. x, p. xxxiii.
Pitta erythrogastra, *P. kochi*, & *P. steerii*, notes on; WHITEHEAD, Ibis 1899, pp. 243–246.
P. dohertyi, figured; ROTHSCHILD, Nov. Zool. vi, pl. iii, fig. 2.
P. forsteni, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iv, fig. 41.

Family EURYLÆMIDÆ.

Cymborhynchus macrorhynchus, egg figured; NEHRKORN, Katalog Eiersamml. Taf. iv, fig. 44.
Corydon sumatranus, nest described; BUTLER, J. Bombay Soc. xii, pp. 421 & 422.

Family DENDROCOLAPTIDÆ.

Aphrastura, nomen emend. pro *Oxyurus*, Swainson, nec Rafinesque; OBERHOLSER, P. Ac. Philad. 1899, p. 210.
Synallaxis subspeciosa, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 362, p. 21.
Synallaxis striatipectus, n. sp., Venezuela; CHAPMAN, Bull. Amer. Mus. xii, p. 156.
S. unirufa, in Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 362, p. 20.
Thryolegus, nomen emend. pro *Limnophyes*, Sclater, nec Eaton; OBERHOLSER, P. Ac. Philad. 1899, p. 210.
Sclerurus salvini, n. sp., Western Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 362, pp. 23 & 24.
S. albigularis propinquus, n. subsp., U. S. Colombia; BANGS, P. Biol. Soc. Washington xiii, p. 99.
Dendrocincla brunnea, n. sp., Western Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 362, p. 26).
Dendrocincla macrorhyncha, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 362, p. 27.

Family FORMICARIIDÆ.

Drymophila Such vice *Formicivora* Swains., nec Temm.; RICHMOND, Auk xvi, pp. 353 & 354.

Sclateria, nomen emend. pro *Heterocnemis*, Sclater nec Albers; OBERHOLSER, P. Ac. Philad. 1899, p. 209.
Grallaria periophthalmica, n. sp., Western Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xiii, No. 330 (1898).

Family CONOPOPHAGIDÆ.

Conopophaga browni, n. sp., U. S. Colombia; BANGS, P. Biol. Soc. Washington xiii, pp. 100 & 101.

Family PTEROPTOCHIDÆ.

Scytalopus latebricola, n. sp., U. S. Colombia; BANGS, P. Biol. Soc. Washington xiii, pp. 101 & 102.
Acropternis infuscata, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 362, p. 34.

Family ATRICHIIDÆ.

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IV. REPTILIA AND BATRACHIA.

BY

G. A. BOULENGER, F.R.S.

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Lygodactylus, Gray. On an adhesive expansion, similar to that of the digits, at the extremity of the tail: TORNIER, Biol. Centrbl. xix, p. 549, figg.

Lepidodactylus crepuscularis, Bavay, recorded from the Tonga Ids. by WERNER, Zool. Anz. xxii, p. 374.

Gecko rhacophorus, sp. n., BOULENGER, Ann. Nat. Hist. (7) iv, p. 451, Mt. Kina Balu, N. Borneo.

AGAMIDÆ.

Agama isolepis, Blgr. = *A. sanguinolenta*, Pall.: NIKOLSKI, Ann. Mus. St. Petersb. 1899, p. 173; *A. isozona*, sp. n., WERNER, Zool. Anz. xxii, p. 479, Margelan, Turkestan.

Stellio lehmanni, Strauch, and *himalayanus*, Stdr., figured in FEDTSCHENKO'S "Reise Turkest.", Zool. ii, pt. vii, pl. vi, figg. 1 & 2.

Phrynocephalus helioscopus, Pall., var. *horvathi*, Méhely, described and figured by L. v. MÉHELY, Termes. Fuzetek xxii, p. 361, pl. xiv; *P. candivolvulus*, Pall., and *interscapularis*, Licht., figured in FEDTSCHENKO, t. c. pl. vi, figg. 3 & 4; *P. strauchi*, sp. n., NIKOLSKI, in FEDTSCHENKO, t. c. p. 21, Ferghana and Aral districts, Turkestan.

IGUANIDÆ.

Anolis garmani, n. n. for *A. edwardsii*, D. & B. nec Merr.: STEJNEGER, Amer. Natural. xxxiii, p. 601; *A. sulcifrons*, p. 6, pl. ii, fig. 1, *frenatus*, p. 6, pl. ii, fig. 2, and *purpurescens*, p. 7, spp. nn., COPE, Bull. Philad. Mus. i, Andes of Colombia; *A. curtus*, sp. n., BOULENGER, P. Z. S. 1898, p. 919, pl. lv, fig. 2, Costa Rica.

Stenocercus simonsii, sp. n., BOULENGER, Ann. Nat. Hist. (7) iv, p. 454, Andes of Ecuador.

Liocephalus rhodomelas, sp. n., BOULENGER, t. c. p. 455, Andes of Ecuador.
Tropidurus unicarinatus, sp. n., WERNER, Zool. Anz. xxii, p. 480, Surinam.
Liolæmus fitzgeraldi, sp. n., BOULENGER, in E. A. FITZGERALD'S 'Highest Andes,' p. 355, fig., Puenta del Inca, Andes of Argentina, 8930 ft.
Brachylophus fasciatus, Brongn. On its presence in the Tonga Ids.: WAITE, P. Linn. Soc. N. S. Wales xxiv, p. 284.
Crotaphytus fasciatus, sp. n., MOCQUARD, Arch. Mus. (4) Mem. i, p. 303, pl. xiii, fig. 1, Lower California.
Uta mearnsi, Stejn. and *thalassina*, Cope, figured by MOCQUARD, t. c. pl. xi, figg. 1 & 2.
Sceloporus digueti, sp. n., MOCQUARD, t. c. p. 311, pl. xiii, fig. 2, Lower California.
Erichosaurus, g. n., referred to the *Iguanidæ*, for *E. diminutus*, *debilis*, and *bombimaxila*, spp. nn. (foss.), AMEGHINO, Sin. geol.-pal., Supl. p. 10, Patagonia.

ZONURIDÆ.

Chamæsaura annectens, sp. n., BOULENGER, P. Z. S. 1899, p. 97, Mau Mts, Brit. East Africa.

ANGUIDÆ.

Ophisaurus harti, sp. n., BOULENGER, P. Z. S. 1899, p. 160, fig., pl. xvi, N. W. Fokien, China.
Diploglossus nuchalis, sp. n., BOULENGER, P. Z. S. 1898, p. 920, pl. lvi, fig. 1, Hab. —?

HELODERMATIDÆ.

A. DUGÈS, Jubil. Soc. Biol. pp. 134–137, figg., remarks on the supposed poisonous properties of *Heloderma horridum*. His own experiments would conclude in favour of innocuity or but slight toxicity of the bite of this reptile.
An abstract of C. G. SANTESSON'S experiments on the poison of *Heloderma suspectum* (Nord. Medic. Arkiv, Festband tilleg. Axel Key. No. 5, 1897, pp. 1–48) is given in Zool. Centrlbl. v, p. 35.
Lanthanotus borneensis, Stdr. Notes by BOULENGER, P. Z. S. 1899, p. 596, fig.

VARANIDÆ.

Varanus griseus, Daud:, figured in HEMPRICH & EHRENBERG'S 'Symbolæ physicæ,' pl. i; *V. brevicauda*, sp. n., BOULENGER, P. Z. S. 1898, p. 920, pl. lvi, fig. 2, Nicol Bay, W. Australia; *V. warburtonensis*, sp. n. (foss.), ZIETZ, Tr. R. Soc. S. Austral. xxiii, p. 210, Pleistocene (?), Warburton R., S. Australia.

TEIIDÆ.

Ameiva leucostigma, sp. n., BOULENGER, P. Z. S. 1899, p. 517, pl. xxviii, Ecuador, = *Cnemidophorus lentiginosus*, Garm.; id. Ann. Nat. Hist. (7) iv, p. 455.
Arthroseps, g. n., near *Arthrosaura*, Blgr.: BOULENGER, P. Z. S. 1898, p. 920; *A. werneri*, sp. n., id. ibid. p. 921, pl. lv, fig. 3, Sta. Catharina, Brazil.
Prionodactylus bolivianus, sp. n., WERNER, Zool. Anz. xxii, p. 481, Bolivian Chaco.

Heterodonium bicolor, g. & spp. nn., COPE, Bull. Philad. Mus. i, p. 9, pl. iii, Bogota, Colombia [= *Heteroclonium bicolor*, Cope, 1896, = *Bachia dorbignyi*, D. & B.—REC.].

AMPHISBÆNIDÆ.

Amphisbæna phylofiniens, sp. n., TORNIER, Zool. Anz. xxii, p. 260, Ujiji, German E. Africa.

LACERTIDÆ.

Tachydromus septentrionalis, Gthr. Note by BOULENGER, P. Z. S. 1899, p. 161.

Lacerta viridis, Laur. On its distribution in Normandy: LETACQ, Bull. Soc. Rouen xxxiv, p. 12; *L. muralis fusca*, var. n. *naxensis*, WERNER, Wiss. Mitt. Bosnien vi, p. 835, Naxos, Greece, and var. n. *nigrogularis*, id. ibid., Milos, Greece; *L. jacksoni*, sp. n., BOULENGER, P. Z. S. 1899, p. 96, pl. x, Mau Mts, Brit. East Africa.

Acanthodactylus pardalis, Licht., *tristrami*, Gthr. (*Lacerta platyura*, Hempr. & Ehrenb.), *scutellatus*, Aud., and *boskianus*, Daud., (*L. longicauda*, H. & E.), figured in HEMPRICH & EHRENBERG'S 'Symbolæ physicæ,' pl. ii, figg. 2–5.

Eremias guttulata, Licht., figured, op. cit. pl. ii, fig. 1.

Scaptira grammica, Licht., and *scripta*, Strauch, figured in FEDTSCHENKO'S 'Reise Turkest.', Zool. ii, pt. vii, pl. vii, figg. 1 & 2.

SCINCIDÆ.

Mabuia brevicollis, Wgm. (*Euprepes pyrrhocephalus* and *E. brevicollis*, Hempr. & Ehrenb.), *septemtæniata*, Reuss (*E. massauensis*, H. & E.), and *vittata*, Ptrs. (*E. tomardi*, H. & E.), figured in HEMPRICH & EHRENBERG'S 'Symbolæ physicæ,' pl. v, figg. 1–4; *M. multifasciata*, Kuhl, and *siamensis*, Gthr., redescribed by S. S. FLOWER, P. Z. S. 1899, pp. 645 & 647.

Lygosoma bowringii, Gthr., redescribed by S. S. FLOWER, P. Z. S. 1899, p. 650; *L. nigrum*, H. & J. Note by PERACCA, Rev. Suisse Zool. vii, p. 323; *L. samoense*, A. Dum. Note by WERNER, Zool. Anz. xxii, p. 375; *L. cyanogaster*, var. n. *tongana*, WERNER, t. c. p. 374, Tonga and Fiji Ids.; *L. mehelyi*, sp. n., WERNER, Zool. Anz. xxii, p. 372, German New Guinea; *L. aignanum*, p. 921, pl. lvii, fig. 1, St Aigan Id., Brit. New Guinea, *alfredi*, p. 922, pl. lv, fig. 4, N. Borneo, and *gastrostigma*, p. 922, pl. lvii, fig. 2, Nicol Bay, W. Australia, spp. nn., BOULENGER, P. Z. S. 1898; *L. arundelii*, sp. n., S. GARMAN, P. N. Engl. Zool. Club i, p. 59, Clipperton Id.

Eumeces schneideri, Daud., figured in HEMPRICH & EHRENBERG'S 'Symbolæ physicæ,' pl. iv, fig. 4.

Scincus hemprichii, Wgm., *officinalis*, Laur., and *meccensis*, Wgm., figured, op. cit. pl. iv, figg. 1–3.

Chalcides sepoides, Aud., figured, op. cit. pl. v, fig. 5.

Parachalcides, g. n., allied to *Chalcides* & *Sepsina*, for *P. socotranus*, sp. n., BOULENGER, Bull. Liverp. Mus. ii, p. 6, Socotra.

RHIPTOGLOSSA.

M. BORYSIEKIEWICZ has a contribution to the knowledge of the skin of *Chamæleon vulgaris* (Leipzig, 1899, 8vo).

Chamæleon jacksoni, Blgr. Female described by TORNIER, Zool. Anz. xxii, p. 410; *C. werneri*, pp. 258, fig., & 408, pl. —, fig. 1, Mashonaland, *quadricornis*, p. 259, fig., Camaroons, *tempeli*, p. 411, pl. —, figg. 2 & 4, German E. Africa, and *goetzei*, p. 413, pl. —, fig. 3, spp. nn., TORNIER, t. c.; *C. axillaris*, sp. n., WERNER, Zool. Anz. xxii, p. 183, Madagascar.

PYTHONOMORPHA.

H. F. OSBORN, Mem. Amer. Mus. i, pp. 167–188, figg., pls. xxi–xxiii, and Science (2) x, pp. 919–925, figg., describes a complete skeleton, osseous and cartilaginous, of *Tylosaurus dyspelor*, Cope, and makes a few remarks on the relationships of the *Pythonomorpha*.

Platecarpus coryphæus, Willist. Further notes by WILLISTON, Kansas Quart. viii, p. 39, pl. xii.

OPHIDIA.

O. BOETTGER, Ber. Senckenberg. Ges. 1899, pp. 75–88, figg., has a popular article on the habits and systematic characters of Snakes.

F. WERNER, Arb. Inst. Wien xi, pp. 117–162, 3 pls., deals with the head-shields of Snakes from the point of view of their homologies and derivation.

C. PHISALIX, Jubil. Soc. Biol. pp. 240–245, investigates the physiological properties of the poison of *Coelopeltis*, which bears greater resemblance to that of the Cobra than to that of the Viper, and would indicate relationship of the Opisthoglyphs with the Proteroglyphs rather than with the Vipers.

L. KATHARINER, Bull. Soc. Fribourg vii, pp. 186–195, has a preliminary communication on the structure of the nasal organ in aquatic Snakes.

W. LINDEMANN, Arch. mikr. Anat. liii, pp. 313–321, pl. xvi, investigates the secretory action of the poison-gland in *Vipera berus*.

H. MARTIN, Bull. Soc. zool. France xxiv, pp. 106–116, figg., describes the structure of the poison-gland in an embryo of *Vipera aspis*.

L. WILL, Biol. Centrbl. xix, pp. 396–407, figg., writes on gastrulation in *Tropidonotus natrix*.

G. ANDERSSON, Bih. Svenska Ak. xxiv, no. 6, has examined the Linnean type specimens of Snakes in the Stockholm Museum.

A. J. HARRISON, Rep. Brit. Ass. 1898, p. 911, remarks on the so-called Fascination of Snakes.

QUELCH's paper on the Poisonous Snakes of British Guiana (Zool. Rec. xxxv, Rept. p. 9) is reprinted in Ann. Nat. Hist. (7) iii, pp. 402–409.

TYPHLOPIDÆ.

Helminthophis anops, sp. n., COPE, Bull. Philad. Mus. i, p. 10, pl. iv, fig. 1, Bogota, Colombia.

Typhlops buchholzi, Ptrs. Note by WERNER, Verh. Ges. Wien xlix, p. 134; *T. floweri*, sp. n., BOULENGER, P. Z. S. 1899, p. 654, pl. xxxvii, fig. 2, Siam.

GLAUCONIIDÆ.

Glauconia boettgeri, sp. n., WERNER, Zool. Anz. xxii, p. 116, Hab. —?; *G. filiformis* and *longicauda* [should be charged to *macrura*,—REC.], spp. nn., BOULENGER, Bull. Liverp. Mus. ii, p. 7, Socotra.

BOIDÆ.

Liasis albertisii, Ptrs. & Doria. Note by WERNER, Verh. Ges. Wien xlix, p. 149.

Nardoa boa, Schleg. Note by WERNER, Zool. Anz. xxii, p. 373.

Python amethystinus, Schn. Notes by WERNER, t. c. and Verh. Ges. Wien xlix, p. 150; *P. molurus*, L. Divided into three local races: var. *ocellata*, W. & S. India, *intermedia*, N. E. India and Further India, *sondaica*, Sumatra, id. Zool. Garten xl, p. 24; *P. regius*, Shaw. Note by WERNER, Verh. Ges. Wien xlix, p. 145.

Eunectes notæus, Cope. Note by COPE, Bull. Philad. Mus. i, p. 20, pl. i, fig. 3.

ILYSIIDÆ.

Cylindrophis rufus, Laur. Note by PERACCA, Rev. Suisse Zool. vii, p. 323. Figured from life, with notes on the habits, by S. S. FLOWER, P. Z. S. 1899, p. 656, pl. xxxvii, fig. 3.

COLUBRIDÆ.

Aglypha.

Stoliczkaia borneensis, sp. n., BOULENGER, Ann. Nat. Hist. (7) iv, p. 452, Mt Kina Balu, N. Borneo.

Tropidonotus stolatus, L. Note by F. WALL, J. Bombay Soc. xii, p. 765; *T. depressiceps*, Wern. Note by WERNER, Verh. Ges. Wien xlix, p. 135; *T. craspedogaster* and *percarinatus*, spp. nn., BOULENGER, P. Z. S. 1899, p. 163, pl. xvii, figg. 1 & 2, N. W. Fokien, China; *T. digueti*, sp. n., MOCQUARD, Arch. Mus. (4) Mem. i, p. 327, pl. xii, fig. 2, Lower California; *T.* (*Macropophis*) *dahlii*, sp. n., WERNER, Zool. Anz. xxii, p. 373, Herbertshöhe, Bismarck Archipelago.

Thamnophis sirtalis pallidula, subsp. n., G. M. ALLEN, P. Boston Soc. xxix, p. 64, New Hampshire; *T. pickeringi*, B. & G. Note by MEEK, Field Mus. Zool. i, p. 234; *T. leptocephala olympia*, var. n., id. ibid. p. 235, Olympic Mts, Washington Territory; *T. substriata*, sp. n., id. ibid. p. 235, Olympic Mts, Washington Territory.

Pseudoxenodon intermedius, sp. n., LOENNBERG, Zool. Anz. xxii, p. 109, Java [= *Tropidonotus subminiatus*, Schleg.—REC.].

Bothrophthalmus lineatus, Ptrs. Note by WERNER, Verh. Ges. Wien xlix, p. 135.

Boodon olivaceus, A. Dum. Note by WERNER, t. c. p. 136.

Stegonotus cucullatus, D. & B., and *S. modestus*, Schleg. Notes by WERNER, Verh. Ges. Wien xlix, p. 151; *S. heterurus*, Blgr. Note by WERNER, Zool. Anz. xxii, p. 374.

Zamenis constrictor, L. Notes on the habits: W. E. PRAEGER, Amer. Natural. xxxiii, p. 597; *Z. fedtschenkoi*, Strauch (*ravergieri*, Mén.), figured in FEDTSCHENKO'S 'Reise Turkest.', Zool. ii, pt. vii, pl. ix; *Z. acuminatus*, sp. n. (foss.), COPE, J. Ac. Philad. (2) xi, p. 197, Pleistocene of Port Kennedy, Pennsylvania.

Herpetodryas schlüteri, sp. n., WERNER, Zool. Anz. xxii, p. 115, Ecuador [= *H. grandisquamis*, Ptrs.—REC.].

Dendrophis irregularis, Merr., var. *papuana*, Méhely. Note by WERNER, Verh. Ges. Wien xlix, p. 152.

Philothamnus nitidus, Gthr. and *irregularis*, Leach. Notes by WERNER, t. c. pp. 137 & 147.

Thrasops flavigularis, Hallow. Note by WERNER, t. c. p. 138.

Coluber quatuorlineatus, Lacép. Note by WERNER, Zool. Anz. xxii, p. 376; *C. obsoletus*, B. & G. On a specimen with malformed head-shields: STEJNEGER, Amer. Natural. xxxiii, p. 251, figg.; *C. tæniurus*, Cope. Notes by A. L. BUTLER, J. Bombay Soc. xii, p. 425; *C. t. ridleyi*, subsp. n., id. ibid. p. 426, Batu Caves, Selangor; *C. rosaliæ*, sp. n., MOCQUARD, Arch. Mus. (4), Mem. i, p. 321, pl. xii, fig. 1, Lower California.

Liophis albiventris, Jan. Note by COPE, Bull. Philad. Mus. i, p. 12; *L. bimaculatus*, sp. n., id. ibid. p. 11, pl. iv, fig. 2, Bogota, Colombia; *L. trifasciatus*, sp. n., WERNER, Zool. Anz. xxii, p. 114, Paraguay.

Rhadinæa decorata, Gthr. Note by WERNER, Verh. Ges. Wien xlix, p. 472; *R. dichroa*, sp. n., WERNER, Zool. Anz. xxii, p. 115, Argentina.

Simotes violaceus, Cant. Note on an abnormal specimen: F. WALL, J. Bombay Soc. xii, p. 766, figg.

Chilomeniscus stramineus, Cope, figured by MOCQUARD, Arch. Mus. (4), Mem. i, pl. xiii, fig. 4.

Trirhinopholis styani, sp. n., BOULENGER, P. Z. S. 1899, p. 164, pl. xviii, fig. 2, N. W. Fokien, China.

Grayia smythii, Leach. Note by WERNER, Verh. Ges. Wien xlix, p. 138.

Xenurophis cæsar, Gthr. Note by WERNER, t. c. p. 139.

Tapinophis, g. n., allied to *Ophisthotropis*, Gthr., for *T. latouchii*, sp. n., BOULENGER, P. Z. S. 1899, p. 164, pl. xviii, fig. 1, N. W. Fokien, China.

Atractus reticulatus, Blgr. On a specimen from Colombia: WERNER, Verh. Ges. Wien xlix, p. 472.

Macrocalamus lateralis, Gthr. Note by S. S. FLOWER, P. Z. S. 1899, p. 673.

Oreocalamus, g. n., allied to *Macrocalamus*, Gthr., BOULENGER, Ann. Nat. Hist. (7) iv, p. 452; *O. hanitschi*, sp. n., id. ibid. p. 453, Mt Kina Balu, N. Borneo.

Calamaria picteti, sp. n., PERACCA, Rev. Suisse Zool. vii, p. 325, pl. xiv, Sarawak [= *C. semiannulata*, Bttgr.—REC.].

The following generic names are proposed by PHILIPPI, An. Univ. Chile civ, for Chilian 'Aglyphodont' Snakes, without proper definition and without indication of the species to which they apply:—

Leptaspes, *Pachyurus*, *Stenodeiros*, *Pythoniscus*, *Euprepes*, *Aspidula*, *Draconiscus*, *Colubellus*.

Opisthoglypha.

Tarbophis guentheri, And., recorded from Palestine by WERNER, Zool. Anz. xxii, p. 483.

Oxyrhopus guerini, D. & B. On a specimen from Colombia: WERNER, Verh. Ges. Wien xlix, p. 473; *O. intermedius*, sp. n., WERNER, Zool. Anz. xxii, p. 481, S. Brazil.

Himantodes, D. & B. Synopsis of the Species: COPE, Bull. Philad. Mus. i, p. 16; *H. hemigenius* [= *cenchoa*, L.—REC.], p. 16, Costa Rica, and *platycephalus*, p. 17, pl. iv, fig. 4, Bogota, Colombia, spp. nn., id. ibid.

Dipsadoboa unicolor, Gthr. Note by WERNER, Verh. Ges. Wien xlix, p. 140.

Rhamphiophis oxyrhynchus, Rhdt. Note by WERNER, t. c. p. 147.

Erythrolamprus imperialis, B. & G. On a specimen from Colombia: WERNER, t. c. p. 473.

Polemon barthi, Jan. Note by WERNER, t. c. p. 140.

Aparallactus boulengeri, Wern. = *A. peraffinis*, Wern. = *Elapops modestus*, Gthr.: WERNER, t. c. p. 141.

Proteroglypha.

Distira stokesii, Gray. On a large specimen covered with sea-weed: BOULENGER, P. Z. S. 1898, p. 851; *D. gillespiæ*, sp. n., id. ibid. J. Bombay Soc. xii, p. 642, pl. —, Kurrachee.

Pseudelaps muelleri, Schleg. Note by WERNER, Verh. Ges. Wien xlix, p. 153.

Denisonia melanura, Blgr., var. n. *boulengeri*, WAITE, Rec. Austral. Mus. iii, p. 104, fig., Solomon Islands.

Micropechis elapoides, Blgr. Note by WAITE, t. c. p. 105, fig.

Acanthophis antarcticus, Shaw. Note by WERNER, t. c. p. 153.

Boulengerina annulata, Buchh. & Ptrs. Note by WERNER, t. c. p. 141.

Naia melanoleuca, Hallow. and *nigricollis*, Rhdt. Notes by WERNER, t. c. pp. 141 & 148. *N. tripudians*, var. n. *paucisquamis*, PERACCA, Rev. Suisse Zool. vii, p. 328, Borneo.

Furina calonota, D. & B., recorded from near Perth, W. Australia, by WAITE, Rec. Austral. Mus. iii, p. 105.

AMBLYCEPHALIDÆ.

Leptognathus triseriata, sp. n., COPE, Bull. Philad. Mus. i, p. 13, pl. iv, fig. 3, Bogota, Colombia.

VIPERIDÆ.

Causus lichtensteini, Jan. Note by WERNER, Verh. Ges. Wien xlix, p. 142.

Vipera ursinii, Bp., *berus*, L., *aspis*, L., and *ammodytes*, L. On variations and distribution in the Balkan Peninsula: WERNER, Wiss. Mitt. Bosnien vi, pp. 825 & 836; *V. russellii*, Shaw. On a specimen with 63 young: E. C. CHOLMONDELEY, J. Bombay Soc. xii, p. 765.

Atractaspis matschiensis, Werner, p. 142, *reticulata*, Sjöstedt, p. 143, and *dahomeyensis*, Bocage, p. 149. Notes by WERNER, Verh. Ges. Wien xlix.

Ancistrodon intermedius, Strauch, figured in FEDTSCHENKO'S "Reise Turkest." Zool. ii, pt. VII, pl. viii; *A. himalayanus*, Gthr. On individual variations: F. WALL, J. Bombay Soc. xii, p. 411, figg.

DINOSAURIA.

On the Families of *Sauropoda*: MARSH, Rep. Brit. Ass. 1898, pp. 909 & 910, and Geol. Mag. (2) Dec. iv, vi, pp. 157 & 158.

O. C. MARSH, Amer. J. Sci. (4) vii, pp. 227–232, figg., pl. v, writes on footprints of Dinosaurs from the Jurassic of South Dakota.

On Dinosaurian remains from the Kimmeridgian of Octeville, Normandy: G. LENNIER, Bull. Soc. geol. Normand. xviii, p. 59.

Diplodocus longus, Marsh. Description of a considerable portion of the skeleton: H. F. OSBORN, Mem. Amer. Mus. i, p. 191, figg., pls. xxiv–xxviii, and Science (2) x, p. 870, figg.

Clasmodosaurus, g. n., allied to *Ornithopsis*, Seeley, for *C. spatula*, sp. n., AMEGHINO, Sin. geol.-pal. Supl. p. 9, Cretaceous, Patagonia.

Plateosaurus engelhardti, H. v. Mey. On remains from the Keuper of Franconia: BLANCKENHORN, SB. Soc. Erlangen xxix, 1898, p. 74.

Zanclodon lævis, Quenst. On a vertebra: BLANCKENHORN, t. c. p. 87; *Z. cambrensis*, sp. n., E. T. NEWTON, Quart. J. Geol. Soc. lv, p. 89, pl. x, Rhætic Beds near Bridgend, Glamorganshire.

EMYDOSAURIA.

A. VOELTZKOW, Abh. Senckenberg. Ges. xxvi, pp. 1–150, figg., pls. i–xvii, has a memoir on the habits and development of *Crocodilus madagascariensis*, Grand., followed by a bibliographical list comprising the whole literature on Crocodilians recent and fossil.

G. PARAVICINI, Boll. Scient. xxi, pp. 43–56, 2 pls., writes on the articulations of the limbs in *Alligator mississippiensis*, and pp. 81–87, 1 pl., on the myology of the glosso-hyoid region of the same species; also Rend. Ist. Lombardo (2) xxxii, pp. 998 & 999.

Crocodilus porosus, Schn. On its absence from Fiji: WAITE, P. Linn. Soc. N. S. Wales xxiv, p. 283; *C. americanus*, Laur. On a young specimen intermediate between this species and *C. intermedius*, Graves. WERNER, Verh. Ges. Wien xlix, p. 471.

Symptosuchus, g. n., allied to *Notosuchus*, for *S. contortidens*, sp. n. (foss.), AMEGHINO, Sin. geol.-pal. Supl. p. 9, Cretaceous, Patagonia.

CHELONIA.

F. SIEBENROCK, SB. Ak. Wien cviii, pp. 563–595, 3 pls., writes on the larynx and trachæa of Chelonians, and Ann. Hofmus. Wien xiii, pp. 424–437, pls. xvii & xviii, on the structure and development of the hyoid.

A. GOETTE, Zeitschr. wiss. Zool. lxvi, pp. 407–434, figg., pls. xxvii–xxix, has a paper on the development of the carapace, with special reference to the condition in the *Athecæ*.

F. v. MÖLLER, Zeitschr. wiss. Zool. lxv, pp. 573–598, pls. xxx–xxxii, writes on the urogenital system in some Chelonians.

F. W. PICKEL, Zool. Bull. ii, pp. 291–301, figg. writes on the accessory bladders of Chelonians.

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Ixalus bistrigatus, Wern. = *Rana oxyrhynchus*, Sundev. WERNER, Zool. Anz. xxii, p. 377.

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ENGYSTOMATIDÆ.

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Cyclorhamphus asper, sp. n., WERNER, t. c. p. 482, St Catharina, Brazil.

Ceratophrys prisca, sp. n. (foss.), AMEGHINO, Sin. geol.-pal. Supl. p. 10, Upper Miocene of Monte Hermoso, Argentina.

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BUFONIDÆ.

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Pelodytes punctatus, Daud., recorded from near Cambrai, France, by GODON, Feuille Natural. xxix, p. 90; *P. caucasicus*, Blgr., figured by RADDE, Samml. Kaukas. Mus. i, Zool. pl. xix.

Leptobrachium boulengeri, sp. n., BEDRIAGA, Przewalski Reis., Zool. iii, i, p. 63, pl. i, fig. 7, Upper Yang-tse-kiang; *L. boettgeri*, sp. n., BOULENGER, P. Z. S. 1899, p. 171, pl. xix, fig. 3, N. W. Fokien, China; *L. baluense*, sp. n., BOULENGER, Ann. Nat. Hist. (7) iv, p. 453, Mt. Kina Balu, N. Borneo.

Palæobatrachus laubei, Bieber (foss.). Remains described and figured by LAUBE, Abh. Ver. Lotos i, 1898, p. 59, pl. viii, figg. 1–5.

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HEMIPHRACTIDÆ.

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DISCOGLOSSIDÆ.

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AGLOSSA.

The genus *Hymenochirus*, Blgr. is regarded as more nearly related to *Pipa* than to *Xenopus*. *H. boettgeri*, Torn., redescribed: BOULENGER, Ann. Nat. Hist. (7) iv, p. 122.

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B. M. SHITKOV, Zool. Anz. xxii, pp. 246–257, figg., investigates the structure and development of the limbs of *Salamandrella keyserlingii*, Dyb. (*Isodactylium schrenkii*, Strauch).

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C. I. CONSTANTINESCO, Bull. Soc. Bucarest viii, pp. 204–207, figg., remarks on the urogenital apparatus of the male *Molge vulgaris*.

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Salamandra caucasica, Waga, figured by RADDE, Samml. Kaukas. Mus. i, Zool. pl. xix.

Molge alpestris, Laur. On sexually mature branchiate specimens: L. v. MÉHELY, Termes. Kozl. Magyar Tars. xlii, p. 138, figg.

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Autodax lugubris, Hallow. On the life history: W. E. RITTER & L. MILLER, Amer. Natural. xxxiii, p. 691, figg.

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Leurognathus, g. n., near *Desmognathus*, for *L. marmorata*, sp. n., J. P. MOORE, J. Ac. Philad. 1899, p. 316, North Carolina.

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Archæotriton menzelii, sp. n. (foss.), LAUBE, Abh. Ver. Lotos i, 1898, p. 68, pl. viii, figg. 7 & 8, Oligocene, Sulloditz, Bohemia.

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APODA.

A. BRAUER, Zool. Jahrb. Anat. xii, pp. 477–508, pls. xxii–xxv, brings out the second part of his study of the development of *Hypogeophis rostratus* and *H. alternans*.

E. A. GÖLDI, Zool. Jahrb. Syst. xii, pp. 170–173, pl. ix, has a note on the development of *Siphonops annulatus*.

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IV. REFERENCES ARRANGED SYSTEMATICALLY.

TELEOSTOMI.

TELEOSTEI.

E. W. L. HOLT, Ann. Mus. Marseille, Zool. v, No. 2, 128 pp., 9 pls., has a memoir on the development of Teleosteans in the Gulf of Marseilles.

E. C. STARKS, P. U. S. Mus. xxii, pp. 1–10, pls. i–iii, writes on the osteological characters of *Mugil*, *Atherina*, and *Sphyræna*.

On the structure of the dorsal spines of *Apogon* and a few other Acanthopterygian genera: VAILLANT, Proc. Intern. Congr. Zool. 1898, pp. 174–176, figg.

U. DAHLGREN, Science (2) ix, p. 313, gives a summary of his observations on maxillary and mandibular breathing valves in Teleosteans.

G. L. MITCHELL, P. Indiana Ac. 1899, pp. 229–232, figg., writes on aberrant follicles in the ovary of *Cymatogaster*.

C. J. HERRICK, Bull. U. S. Fish Comm. xviii, pp. 315–320, figg., writes on the peripheral nervous system of Teleosteans.

N. GORONOWITSCH, Mem. Soc. Moscou xxi, 1898, pp. 1–55, 3 pls., has a memoir on the development of the cranial nerves in *Salmo fario*.

G. H. PARKER & F. K. DAVIS, P. Boston Soc. xxix, pp. 163–178, 3 pls., write on the blood-vessels of the heart in *Carcharias*, *Raia*, and *Amia*.

F. B. SUMNER, Science (2) ix, pp. 313 & 314, summarises the results of his investigations in the early development of the Siluroid *Noturus*.

W. FELIX, Anat. Hefte, i, viii, 1897, pp. 249–466, figg., pls. xxxiv–xli, has a contribution to the development of *Salmo salar* and *S. fario*.

M. A. WILLCOX, Zool. Bull. ii, pp. 151–154, investigates the development of the occipital region of *Salmo fario*.

J. JABLONOWSKI, Festschr. A. B. Meyer, Abh. Mus. Dresden 1899, No. 8, has a paper on the development of the spinal cord of *Esox lucius*.

A. SWAEN & A. BRACHET, Arch. Biol. xvi, pp. 173–311, pls. xi–xvi, study the first phases in the development of the organs derived from the mesoblast in Teleostean Fishes.

W. REINHARD, Biol. Centrbl. xix, pp. 486 & 487, has a preliminary communication on the signification of the periblast in the development of Teleosteans.

L. BERG, Izv. Obshch. Moskov. lxxxvi, ii, Nos. 9 & 10, has a paper, in Russian, on the parablast of *Esox lucius*.

E. GREGORY, Festschrift C. v. Kupffer, pp. 711–716, pls. xl & xli, writes on Kupffer's vesicle in *Salmo fario*.

ACANTHOPTERYGII.

SERRANIDÆ.

Percichthys antiquus, sp. n. (foss.), A. S. WOODWARD, Revist. Mus. Paulista iii, p. 68, pls. iii & iv, figg. 6 & 7, Tertiary of Taubaté, S. Paulo, Brazil.

Bostockia, Casteln., a genus allied to *Macquaria*, defined by DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiv, p. 166; *B. hemigramma*, sp. n., id. ibid. p. 168, coastal streams south of Perth, West Australia.

Polyprion americanus, Bl. Schn. On a specimen from the sea of La Plata: BERG, Comun. Mus. Buenos Aires i, p. 93.

Epinephelides, g. n., allied to *Epinephelus*: DOUGLAS OGILBY, t. c. p. 169; *E. leai*, sp. n., id. ibid. p. 170, Pelsart Island, Houtman Abrolhos Group.

Serranus agassizii, Stdr., redescribed by BOULENGER, Boll. Mus. Torino xiv, No. 335, p. 2; *S. humeralis*, C. & V., and *conceptionis*, C. & V., notes by J. F. ABBOTT, P. Ac. Philad. 1899, pp. 348 & 349; *S. wemmeliensis*, sp. n. (foss.), STORMS, Mem. Soc. Belge Geol. x, 1898, p. 210, pl. v, figg. 1 & 2, Upper Eocene, near Brussels.

Liopropoma longilepis, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 45, off Pacific Coast of Colombia, 85–100 faths.

Prionodes baldwini, sp. n., EVERMANN & MARSH, Rep. U. S. Fish. Comm. f. 1899, p. 353, Puerto Rico.

Anthias pulchellus, sp. n., WAITE, Mem. Austral. Mus. iv, p. 77, pl. xii, New South Wales.

Centristhmus, g. n., allied to *Anthias*: GARMAN, t. c. p. 47; *C. signifer*, sp. n., id. ibid. p. 48, off Panama, 85–127 faths.

Callanthias platei, Stdr. Note by BOULENGER, Ann. Nat. Hist. (7) iii, p. 346; *C. platei australis*, subsp. n., DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiv, p. 173, coast of New South Wales.

Anagramma, g. n., for *Callanthias allporti*, Gthr.: DOUGLAS OGILBY, t. c. p. 175.

Edelia vittata, Cast., redescribed by DOUGLAS OGILBY, t. c. p. 175.

Priacanthus carolinus, Less. Note by JORDAN & MCGREGOR, Rep. U. S. Fish Comm. f. 1898, p. 278.

Prolates, n. n. for *Pseudolates*, Priem nec Macleay: PRIEM, Bull. Soc. geol. France (3) xxvii, p. 252.

Apogon rueppellii, Gthr., redescribed by DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiv, p. 165; *A. atricaudus*, sp. n., JORDAN & MCGREGOR, Rep. U. S. Fish Comm. f. 1898, p. 277, Socoro and Clarion Islands; *A. macrolepis*, sp. n. (foss.), STORMS, t. c. p. 220, pl. v, figg. 3–7, Upper Eocene, near Brussels.

Dinolestes, Klunz. On the skeleton and relationship: STARKS, P. U. S. Mus. xxii, p 113, pls. viii–xi.

PRISTIPOMATIDÆ.

Therapon humeralis, sp. n., DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiv, p. 177, Pelsart Island, Houtman's Abrolhos.

Pristipoma conceptionis, C. & V. Note by J. F. ABBOTT, P. Ac. Philad. 1899, p. 350; *P. labraciforme*, sp. n., BOULENGER, Boll. Mus. Torino xiv, No. 335, p. 3, Coast of Ecuador.

Hæmulon helenæ, sp. n., BOULENGER, t. c., Coast of Ecuador.

Diagramma macrolepis, sp. n., BOULENGER, Ann. Mus. Congo i, p. 50, pl. xxvi, Congo.

Ctenodentex, g. n. for *Dentex laekeniensis*, Van Ben. (foss.): STORMS, Mem. Soc. Belge Geol. x, 1898, p. 199, pls. iii & iv.

Mœna osbeckii, C. & V. = *M. vulgaris*, L., the former name applying to the male, the latter to the female: FACCIOLA, Boll. scient. xix, p. 46.

Smaris chryselis, C. & V., is the male of *S. gagarella*, C. & V.: FACCIOLA, t. c. p. 73.

SQUAMIPINNES.

Atyposoma, g. n., allied to *Atypichthys*, Gthr., for *A. gurneyi*, sp. n., BOULENGER, Ann. S. Afr. Mus. i, p. 379, pl. ix, False Bay, Cape of Good Hope.

SPARIDÆ.

Calamus kendalli, sp. n., EVERMANN & MARSH, Rep. U. S. Fish. Comm. f. 1899, p. 354, Puerto Rico.

Girella multilineata, sp. n., F. E. CLARKE, Tr. N. Zealand Inst. xxxi, p. 98, pl. vii, Moturoa, New Zealand.

Chrysophrys lens, Ag. (foss.). Note by WITTICH, Notizbl. Ver. Erdk. Darmstadt (4) xviii, 1897, p. 45.

SCORPÆNIDÆ.

Sebastes thetidis, sp. n., WAITE, Mem. Austral. Mus. iv, p. 100, pl. xx, New South Wales.

Sebastodes introniger, Gilb. Note by GILBERT, Rep. U. S. Fish. Comm. f. 1898, p. 26. *S. aleutianus*, Jord. & Everm., figured by JORDAN & GILBERT, 'Fur Seals and Fur-Seal Islands,' iii, pl. xlviii.

Sebastopsis xyris, Jord. & Gilb., redescribed by JORDAN & MCGREGOR, Rep. U. S. Fish. Comm. f. 1898, p. 283.

Pontinus furcirhinus, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 51, pl. vii, off Galapagos Islands, 66–210 faths.

Ectreposebastes, g. n., allied to *Sebastes*, for *E. imus*, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 53, pls. viii & ix, off Galapagos Islands, 384 faths.

Scorpænoides popovicii, sp. n. (foss.): PRIEM, Bull. Soc. geol. France (3) xxvii, p. 248, pl. ii, figg. 27–30, Eocene of Valea Caselor, Roumania.

Synancia verrucosa, Bl. Schn. (*S. sanguinolenta*, H. & E.) figured in HEMPRICH & EHRENBERG'S Symbolæ physicæ, Zool. pl. iii and Zool. pl. x.

TEUTHIDIDÆ.

Teuthis aliala, Q. & G., redescribed by JORDAN & MCGREGOR, Rep. U. S. Fish. Comm. f. 1898, p. 280; *T. elegans*, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 70, pl. L, fig. 2, Cocos Islands.

BERYCIDÆ.

Hoplostethus pacificus, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 56, pls. A, x & xi, Galapagos Archipelago, 384 faths.

Trachichthys mento, sp. n., GARMAN, t. c. p. 58, pl. xi, figg. 2–7, off Pacific Coast of Colombia, 259–511 faths.

√ *Paratrachichthys*, g. n. for *Trachichthys trailli*, Hutt.: WAITE, Mem. Austral. Mus. iv, p. 64.

Caulolepis subulidens, sp. n., GARMAN, t. c. p. 60, pls. B & xii, Gulf of Panama and off Southern California, 776–1832 faths.

Melamphaës mizolepis, Gthr., and *lugubris*, Gilb., redescribed by GARMAN, t. c. pp. 62 & 63; *M. nigropulvus*, p. 64, pl. D, fig. 2, Gulf of Panama, 1793 faths., *maxillaris*, p. 66, pl. D, fig. 1, off Pacific Coast of Colombia, 1573 faths., and *frontosus*, p. 67, off Pacific Coast of Mexico, 852–995 faths., spp. nn., id. t. c.

Anogmius polymicrodus, Stewart (foss.), redescribed and figured by A. STEWART, Kansas quart. viii, p. 117, pl. xxxi.

Homonotus pulcher, J. W. Davis (foss.) = *Pycnosterinx russeggeri*, Heck.: A. S. WOODWARD, Ann. Nat. Hist. (7) iv, p. 319.

Monocentris gloria-maris, De Vis, redescribed by DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiv, p. 163.

√ *Howella*, g. n., type of a new family, *Howellidæ*, compared to *Monocentridæ*, *Anomalopidæ*, and *Holocentridæ*; J. DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiii, p. 733; *H. brodiei*, sp. n., id. ibid. p. 735, Lord Howe Island.

SCIÆNIDÆ.

Otolithus analis, Jen., *altipinnis*, Stdr., and *peruanus*, Tsch. Notes by J. F. ABBOTT, P. Ac. Philad. 1899, pp. 352 & 353.

Corvina miacanthus, sp. n., BOULENGER, Boll. Mus. Torino xiv, No. 335, p. 5, Guayaquil.

Sciæna gilberti, sp. n., J. F. ABBOTT, t. c. p. 355, Coast of Peru.

XIPHIIDÆ.

Histiophorus gladius, Brouss. (*triactis*, H. & E.), figured in HEMPRICH & EHRENBERG's Symbolæ physicæ, pl. x.

TRICHIURIDÆ.

Lepidopus atlanticus, Goode & Bean. On a specimen from Madeira; BOULENGER, Ann. Nat. Hist. (7) iii, p. 180; *L. xantusi*, Goode & Bean. Note by JORDAN & MCGREGOR, Rep. U. S. Fish. Comm. f. 1898, p. 276.

Trichiurides sagittidens, Winkler (foss.), notes by WITTICH, Notizbl. Ver. Erdk. Darmstadt (4) xix, 1898, p. 47, pl. i, fig. 8.

Trichiurus nitens, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 69, Gulf of Panama, 210–322 faths.

√ *Machærope*, g. n., allied to *Nealotus* and *Gempylus*: DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiii, p. 736; *M. latispinis*, sp. n., id. ibid. p. 737, Lord Howe Island.

CARANGIDÆ.

√ *Zalocys*, g. n., closely allied to *Lichia*, Cuv.: JORDAN & MCGREGOR, Rep. U. S. Fish. Comm. f. 1898, p. 276; *Z. stilbe*, sp. n., ib. ibid. p. 277, pl. v, Clarion Island.

CORYPHÆNIDÆ.

Coryphæna equisetis, L. Young specimen described by JORDAN & McGREGOR, Rep. U. S. Fish. Comm. f. 1898, p. 276.

Schedophilus botteri, Heck. Note by E. F. TROIS, Atti Ist. Veneto lix, p. 65.

Lampris luna, Gm. On a second specimen from New Zealand: WAITE, Rec. Austral. Mus. iii, p. 166.

SCOMBRIDÆ.

H. M. CARLOS DE BRAGANÇA, Result. Invest. "Amelia," i, discusses the habits, migrations, and distribution of the various kinds of Tunnies of the coast of Portugal.

J. H. MUMMERY, Tr. Odont. Soc. Gt. Brit. xxxi, pp. 62–80, pls. i & ii, has a paper on the teeth of *Echeneis*.

Scomber scombrus, L. On the races and migrations: GARSTANG, Rep. Brit. Ass. 1898, p. 902. On its habits on the American Coast: P. MOORE, Rep. U. S. Fish. Comm. f. 1898, p. 1.

Pelamys chilensis, C. & V. Note by J. F. ABBOTT, P. Ac. Philad. 1899, p. 345.

Dictyodus lingulatus, H. v. Mey. (foss.). Notes by WITTICH, Notizbl. Ver. Erdk. Darmstadt (4) xix, 1898, p. 40, pl. i, fig. 9.

TRACHINIDÆ.

C. PHISALIX, Bull. Mus. Paris 1899, pp. 256–258, has made experiments on the poison of *Trachinus vipera* and *T. draco*.

Aphritis gobio, Gthr. Note by BERG, Comun. Mus. Buenos Aires i, p. 173.

Pinguipes semifasciatus, C. & V., redescribed by BERG, Comun. Mus. Buenos Aires i, p. 172.

Parapercis ocularis, sp. n., WAITE, Mem. Austral. Mus. iv, p. 109, pl. xxiv, New South Wales.

Lopholatilus chamæleonticeps, Goode & Bean: H. C. BUMPUS, Bull. U. S. Fish. Comm. xviii, p. 321, gives a full account of its reappearance.

Chiasmodon subniger, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 73, W. Coast of Mexico, 919 faths.

Kathetostoma averruncus, Jord. & Bollm., redescribed by GARMAN, Mem. Mus. Harvard xxiv, p. 74.

BATHYMASTRIDÆ.

Bathymaster signatus, Cope, figured by JORDAN & GILBERT, 'Fur Seal Islands of North Pacific,' iii, pl. lxxviii.

BATRACHIDÆ.

Porichthys notatus, Gir. On the phosphorescent organs: C. W. GREENE, J. Morphol. xv, p. 667, pls. xxxviii–xl.

PSYCHROLUTIDÆ.

√ *Gilbertidia*, n. n. for *Gilbertina*, Jord. & Starks, 1895, nec Morlet: BERG, Comun. Mus. Buenos Aires i, 1898, p. 42.

PEDICULATI.

Lophius gracilimanus, sp. n., ALCOCK, Descr. Cat. Deep-Sea Fishes Ind. Mus. p. 54, off Malabar Coast, 68–148 pp.; *L. patagonicus*, sp. n. (foss.): AMEGHINO, Sin. geol.-pal., Suppl. p. 10, Cretaceous of Patagonia.

Lophiomus spilurus, p. 77, and *caulinaris*, p. 79, spp. nn., GARMAN, Mem. Mus. Harvard xxiv, Gulf of Panama, 127–259 faths.

√ *Dolopichthys*, g. n., allied to *Ceratius*, for *D. allector*, sp. n., GARMAN, t. c. p. 81, pls. xiii–xv, off Cocos Islands, 770 faths.

Chaunax coloratus, sp. n., GARMAN, t. c. p. 83, pls. c, xvi & xvii, off Cocos Islands, 978 faths.

Oncocephalus porrectus, sp. n., GARMAN, t. c. p. 86, off Cocos Islands, 66 faths.

Zalieutes elator, Jord. & Gilb., redescribed by GARMAN, t. c. p. 88.

√ *Halieutopsis*, g. n., allied to *Halieutæa*: GARMAN, t. c. p. 89, for *H. tumifrons*, sp. n., id. ibid. p. 90, pl. xxv, off Galapagos Islands, 1322–1360 faths.

Dibranchus hystrix, p. 92, pl. xxiii, *scaber*, p. 94, pl. xxiv, and *asper*, p. 95, spp. nn., GARMAN, t. c., off Coasts of Mexico and Central America, 660–1270 faths.

√ *Dibranchopsis*, g. n., GARMAN, t. c. p. 96, for *Halieutæa spongiosa*, Gilb., which is described and figured, p. 97, pl. xx.

√ *Dibranchichthys*, g. n., GARMAN, t. c. p. 99, for *D. nudivomer*, sp. n., id. ibid., off Pacific Coast of Colombia, 695–730 faths.

Malthopsis sparsa, p. 101, pl. xviii, *erinacea*, p. 103, pl. xix, *spinosa*, p. 104, pl. xxii, and *spinulosa*, p. 106, pls. xxi & xxvi, spp. nn., GARMAN, t. c., W. Coasts of Mexico & Central America, 242–680 faths.

COTTIDÆ.

Cottus pœcilopus, Heck., distinguished from *C. gobio*, L.: G. ANDERSSON, Bih. Svenska Ak. xxiv, No. 3.

Ceratocottus diceraus, Pall., and *lucasi*, J. & G., figured by JORDAN & GILBERT, 'Fur Seals and Fur-Seal Islands,' pl. lvi & lvii.

Gymnocanthus pistilliger, Pall., and *galeatus*, Bean, figured by JORDAN & GILBERT, t. c. pls. lviii & lix.

Argyrocottus zanderi, Herz., figured by JORDAN & GILBERT, t. c. pl. lx.

Myoxocephalus nivosus, Herz., *polyacanthocephalus*, Pall., *stelleri*, Til., *mednius*, B. A. Bean, *niger*, Bean, *verrucosus*, Bean, and *axillaris*, Gill, figured by JORDAN & GILBERT, t. c. pls. lxi–lxvii.

Porocottus quadratus, B. A. Bean, figured by JORDAN & GILBERT, t. c. pl. lxvii *b*.

Oncocottus hexacornis, Richards., figured by JORDAN & GILBERT, t. c. pl. lxviii.

Nautiscus pribilovius, J. & G., figured by JORDAN & GILBERT, t. c. pl. lxix.

Archistes plumarius, J. & G., figured by JORDAN & GILBERT, t. c. pl. liii.

Stelgistrum steinegeri, J. & G., figured by JORDAN & GILBERT, t. c. pl. liv.

Enophrys claviger, C. & V., figured by JORDAN & GILBERT, t. c. pl. lv.

Sigmistes caulias (Rutter) Jord. & Everm., described and figured by RUTTER, Bull. U. S. Fish. Comm. xviii, p. 190.

Radulinus boleoides, sp. n., GILBERT, Rep. U. S. Fish Comm. f. 1898, p. 26, pl. i, off Californian Coast.

Icelus hamatus, Kröy. Notes by GRIEG, Bergens Mus. Aarbog 1898, No. 3, p. 1, and by HOLMQVIST, Ann. Nat. Hist. (7) iii, p. 217.

Gymnacanthus ventralis, C. & V. Note by LOENNBERG, Bih. Svenska Ak. xxiv, Afd. iv, No. 9, p. 4.
Centridermichthys uncinatus, Rhdt. Note by LOENNBERG, t. c. p. 7.
Trigla gurnardus, L. On migratory movements and rate of growth: FULTON, Rep. Fish. Board Scotland xvii, p. 210.
Lepidotrigla modesta, sp. n., WAITE, Mem. Austral. Mus. iv, p. 106, pl. xxiii, New South Wales.
Pterygotrigla, n. n. for *Hoplonotus*, Guichen. nec Blanch.: WAITE, t. c. p. 108.
Prionotus frontalis, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 108, Gulf of Panama, 56 faths.
Peristedium barbiger, p. 110, and *crustosum*, p. 112, pl. A, fig. 2, spp. nn., GARMAN, t. c., Gulf of Panama, 56–182 faths.

CATAPHRACTI.

Brachyopsis rostratus, Til., figured by JORDAN & GILBERT, 'Fur Seals and Fur-Seal Islands' iii, pl. lxx.
Podothecus hamlini, J. & G., and *thompsoni*, J. & G., figured by JORDAN & GILBERT, t. c. pls. lxxi & lxxii.
Averruncus sterletus, sp. n., GILBERT, Rep. U. S. Fish. Comm. f. 1898, p. 27, pl. ii, off Californian Coast.

DISCOBOLI.

Cyclopterus spinosus, Fabr. Notes by LOENNBERG, Bih. Svenska Ak. xxiv, Afd. iv, No. 9, p. 17.
Liparis cyclostigma, Gilb., and *herschelinus*, Scofield, figured by JORDAN & GILBERT, 'Fur-Seal Islands of N. Pacific' iii, pls. lxxiii & lxxiv.
Careproctus longifilis, Garm., redescribed and figured by GARMAN, Mem. Mus. Harvard xxiv, p. 115, pls. xxvii & xxviii, fig. 1, and xxix, fig. 5.
Paraliparis fimbriatus, Garm., redescribed and figured by GARMAN, t. c. p. 116, pl. D, fig. 3, and xxix, fig. 1; *P. grandiceps*, p. 117, pl. xxix, fig. 4, Gulf of California, 1588 faths., *attenuatus*, p. 118, pls. xxvii & xxviii, fig. 3, and xxix, fig. 2, off Cocos Ids., 902 faths., *angustifrons*, p. 119, pls. xxvii & xxviii, fig. 4, and xxix, fig. 3, off Cape Mala, 511 faths., and *latifrons*, p. 120, pls. xxvii & xxviii, fig. 2, Gulf of Panama, 1793 faths., spp. nn., id. ibid.
Crystallichthys mirabilis, J. & G., figured by JORDAN & GILBERT, t. c. pls. lxxv & lxxvi.
Prognurus cypselurus, J. & G., figured by JORDAN & GILBERT, t. c. pl. lxxvii.

CEPOLIDÆ.

Cepola, L. Remarks on the species, by DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiv, p. 182; *C. australis*, sp. n., id. ibid. p. 185, Port Jackson.

HETEROLEPIDOTIDÆ.

Hexagrammus, Stell. Synopsis of the species: JORDAN & GILBERT, 'Fur Seal Islands of N. Pacific' iii, p. 451; *H. octogrammus*, Pall., p. 449, pl. l, and *lagocephalus*, Pall., p. 450, pls. li & lii, described and figured, id. ibid.

GOBIIDÆ.

Gobius, Art. Synopsis of the European species: F. A. SMITT, Ofv. Ak. Forh. 1899, pp. 543–555; *G. capito*, C. & V. Recorded from the Coast of Brittany by BOULENGER, Ann. Nat. Hist. (7) iv, p. 229; *G. scorpioides*, Coll. Notes by GRIEG, Bergens Mus. Aarbog 1898, No. 3, p. 8; *G. cæruleo-punctatus*, Rüpp. (*pavoninus*, H. & E.), fig. 4, *cryptocentrus*, C. & V. (*fasciatus*, H. & E.), fig. 5, *hoplopomus*, C. & V. (*pulcher*, H. & E.), fig. 6, and *semidoliatus*, C. & V. (*Priolepis mica*, H. & E.), figured in HEMPRICH & EHRENBERG's Symbolæ physicæ, pl. ix; *G. arundelii*, sp. n., S. GARMAN, P. New Engl. Zool. Club i, p. 63, Shores of Clipperton Is., E. Pacific; *G. bayamonensis*, sp. n., EVERMANN & MARSH, Rep. U. S. Fish. Comm. f. 1899, p. 355, Puerto Rico.

√ *Proterorhinus*, subg. n., for *G. marmoratus*, Pall., SMITT, t. c. p. 544.

√ *Eichwaldia*, subg. n., for *G. caspius*, Eichw., SMITT, t. c. p. 545.

√ *Mugilogobius*, subg. n., for Indian and Japanese species: SMITT, t. c. p. 552.

Bollmannia boqueronensis, sp. n., EVERMANN & MARSH, t. c. p. 356, Puerto Rico.

Crystallogobius nilssonii, Düb. & Kor. Note on the eggs: GRIEG, Bergens Mus. Aarbog 1898, No. 3, p. 10, fig.

Microgobius meeki, sp. n., EVERMANN & MARSH, t. c. p. 356, Puerto Rico.

Asterropteryx semipunctatus, Rüpp. (*Priolepis auriga*, H. & E.), figured in HEMPRICH & EHRENBERG's Symbolæ physicæ, pl. ix, fig. 7.

Sicydium cagnitæ, sp. n., EVERMANN & MARSH, t. c. p. 355, Puerto Rico.

√ *Oreogobius*, g. n., BOULENGER, Ann. Nat. Hist. (7) iv, p. 125; *O. rosenbergii*, sp. n., id. ibid. p. 126, Andes of Ecuador.

Callionymus atrilabiatus, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 122, between Malpelo Is. and Isthmus of Panama, 112–127 faths.

BLENNIIDÆ.

Petroscirtes, Rüpp. *Omobranchus fasciolatus*, H. & E., figured in HEMPRICH & EHRENBERG's Symbolæ physicæ, pl. ix, fig. 1.

Salarias fasciatus, Bl. (*ornatus*, H. & E.) and *flavo-umbrinus*, Rüpp. (*dama*, H. & E.), figured, op. cit. pl. ix, fig. 2; *S. insulæ*, p. 741, and *alboapicalis*, p. 742, spp. nn., DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiii, Lord Howe Is.

√ *Gillias*, g. n., allied to *Enneanectes*, Jord. & Everm., for *G. jordani*, sp. n., EVERMANN & MARSH, Rep. U. S. Fish. Comm. f. 1899, p. 357, Puerto Rico.

Malacoctenus culebræ, *moorei*, and *puertoricensis*, spp. nn., EVERMANN & MARSH, t. c. pp. 357 & 358, Puerto Rico.

√ *Auchenistius*, g. n., allied to *Auchenopterus*, for *A. stahli*, sp. n., EVERMANN & MARSH, t. c. p. 359, Puerto Rico.

Auchenopterus albicaudus, *rubescens*, *cingulatus*, and *fajardo*, spp. nn., EVERMANN & MARSH, t. c. pp. 360 & 361, Puerto Rico.

Entomacrodus cruentatus, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 123, pl. L, fig. 1, off Cocos Is.

Opisthocentrus ocellatus, Til., figured by JORDAN & GILBERT, 'Fur Seals and Fur-Seal Islands' iii, pl. lxxix.

Pholis pictus, Kner, figured by JORDAN & GILBERT, t. c. pl. lxxx *a*.

Enedrias nebulosus, Schleg., figured by JORDAN & GILBERT, t. c. pl. lxxx *b*.

√ *Coralliozetus*, g. n., probably related to *Ophioblennius*, for *C. cardonæ*, sp. n., EVERMANN & MARSH, t. c. p. 362, Puerto Rico.

Lumpenus medius, Rhdt., figured by JORDAN & GILBERT, t. c. pl. lxxxi.

MASTACEMBELIDÆ.

Mastacembelus paucispinis, p. 55, pl. xxviii, fig. 3, Congo, *brachyrhinus*, p. 55, pl. xxviii, fig. 4, Congo, and *ellipsifer*, p. 126, pl. xlvii, fig. 4, L. Tanganyika, spp. nn., BOULENGER, Ann. Mus. Congo, Zool. i.

PROTOSPHYRÆNIDÆ.

Protosphyræna gigas, sp. n. (foss.), A. STEWART, Kansas quart. viii, p. 110, Cretaceous of Kansas.

Empo lisbonensis, sp. n. (foss.), A. STEWART, t. c. p. 111, Cretaceous of Kansas.

SAURODONTIDÆ.

Remarks by A. STEWART, Kansas quart. viii, p. 109.

Xiphactinus, Cope. On some cranial bones: A. STEWART, t. c. p. 19, pls. x & xi; *X. brachygnathus*, sp. n. (foss.), id. ibid. p. 107, Cretaceous of Kansas.

ATHERINIDÆ.

Basilichthys regillus, p. 339, *octavius*, p. 340, and *jordani*, p. 341, spp. nn., J. F. ABBOTT, P. Ac. Philad. 1899, Coast of Peru.

√ *Pisciregia*, g. n., allied to *Atherinopsis*, for *P. beardsleei*, sp. n., J. F. ABBOTT, t. c. p. 342, Coast of Peru.

GASTROSTEIDÆ.

Gastrosteus cataphractus, Pall. Note by JORDAN & GILBERT, 'Fur-Seal Islands of N. Pacific' iii, p. 443.

CENTRISCIDÆ.

Macrorhamphosus scolopax, L., var. n. *elevatus*, WAITE, Mem. Austral. Mus. iv, p. 59, pl. vii, fig. 1, New South Wales.

GOBIESOCIDÆ.

Lepadogaster stictopteryx, sp. n., HOLT & BYRNE, P. Z. S. 1898, p. 589, Coasts of England and Scotland.

LABYRINTHICI.

Anabas, Cuv. (*Ctenopoma*, Ptrs.). On the Congo species: BOULENGER, Ann. Nat. Hist. (7) iii, p. 242; *A. fasciolatus*, sp. n., id. ibid., Upper Congo.

TRACHYPTERIDÆ.

Regalecus glesne, Ascan. On a specimen from Port Jackson: WAITE, Rec. Austral. Mus. iii, p. 163.

NOTACANTHIDÆ.

Notacanthus spinosus, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 301, pl. l, fig. 4, Gulf of Panama, 322–458 faths.

ACANTHOPTERYGII PHARYNGOGNATHI.

POMACENTRIDÆ.

Microspathodon bairdii, Gill, redescribed by JORDAN & MCGREGOR, Rep. U. S. Fish. Comm. f. 1898, p. 282.

Azurina hirundo, Jord. & McGregor, figured by JORDAN & MCGREGOR, t. c. pl. vii.

LABRIDÆ.

Labrus trilobatus, Lacép. (*radiatus*, H. & E.), and *lunulatus*, Forsk., figured in HEMPRICH & EHRENBERG'S Symbolæ physicæ, pl. viii.

√ *Teleogramma*, g. n., allied to *Acantholabrus*, C. & V., for *T. gracile*, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 53, pl. xxviii, fig. 2, Mouth of Congo.

Doratonotus decoris, sp. n., EVERMANN & MARSH, Rep. U. S. Fish. Comm. f. 1899, p. 354, Puerto Rico.

Pseudoscarus gymnognathus, Blkr., redescribed by DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiv, p. 179.

Scarus priscus, sp. n. (foss.), WITTICH, Notizbl. Ver. Erdk. Darmstadt (4) xix, 1898, p. 44, Middle Oligocene, Mayence Basin.

Pharyngodopilus lepsii, sp. n. (foss.), WITTICH, t. c. p. 42, pl. i, fig. 5, Middle Oligocene, Mayence Basin.

CICHLIDÆ.

Synopsis of the African Genera: BOULENGER, P. Z. S. 1899, p. 99.

Lamprologus lemairii, sp. n., BOULENGER, Tr. Zool. Soc. London xv, p. 88, pl. xviii, fig. 1, L. Tanganyika; *L. hecqui*, p. 115, pl. xliv, fig. 1, L. Tanganyika, *brevis*, p. 115, pl. xliv, fig. 2, L. Tanganyika, *tumbanus*, p. 116, pl. xliv, fig. 3, L. Tumba, Congo, *tretocephalus*, p. 117, pl. xliv, fig. 4, and *tetracanthus*, p. 118, pl. xliv, fig. 5, L. Tanganyika, spp. nn., id. Ann. Mus. Congo, Zool. i.

Heros festæ, sp. n., BOULENGER, Boll. Mus. Torino xiv, No. 335, p. 6.

Acara rivulata, Gthr. Note by BOULENGER, t. c. p. 5.

Crenicichla vittata, Heck. Note on a specimen from the R. Paraguay: BERG, Comun. Mus. Buenos Aires i, p. 169; *C. saxatilis*, L. On Uruguay specimens: id. ibid. p. 170.

Paratilapia dewindti, sp. n., BOULENGER, Tr. Zool. Soc. London xv, p. 88, pl. xviii, fig. 2, L. Tanganyika; *P. cerasogaster*, p. 118, pl. xlv, fig. 1, L. Leopold II, Congo, *moeruensis*, p. 119, pl. xlv, fig. 2, L. Mweru, *demeusii*, p. 120, pl. xlv, fig. 3, Congo, and *macrocephala*, p. 121, pl. xlv, fig. 4, L. Mweru, spp. nn., id. Ann. Mus. Congo, Zool. i.

√ *Trematocara*, g. n., allied to *Paratilapia*, for *T. marginatum*, sp. n., BOULENGER, Tr. Zool. Soc. London xv, p. 89, pl. xix, fig. 1, L. Tanganyika.

√ *Pseudoplesiops*, g. n., allied to *Paratilapia*, BOULENGER, Ann. Mus. Congo, Zool. i, p. 121; *P. nudiceps*, sp. n., id. ibid. p. 122, pl. xliv, fig. 6, Congo.

√ *Grammatotria*, g. n., allied to *Paratilapia*, for *G. lemairii*, sp. n., BOULENGER, Tr. Zool. Soc. London xv, p. 90, pl. xviii, fig. 3, L. Tanganyika.

Pelmatochromis ocellifer, sp. n., BOULENGER, P. Z. S. 1899, p. 104, Congo.

Hemichromis tersquamatus, sp. n., GÜNTHER, P. Z. S. 1899, p. 717, pl. xlii, fig. B, Gold Coast. [= *Pelmatochromis guentheri*, Sauv.—REC.]

Ectodus descampsii, Blgr., redescribed and figured by BOULENGER, Tr. Zool. Soc. London xv, p. 90, pl. xix, fig. 2; *E. melanogenys* and *longianalis*, spp. nn., id. ibid. p. 91, pl. xix, figg. 3 & 4, L. Tanganyika; *E. foæ*, sp. n., VAILLANT, Bull. Mus. Paris 1899, p. 221, L. Tanganyika.

✓ *Xenotilapia*, g. n., allied to *Ectodus*, for *X. sima*, sp. n., BOULENGER, t. c. p. 92, pl. xix, fig. 5, L. Tanganyika.

Tilapia, Smith. Revision of the species by BOULENGER, P. Z. S. 1899, pp. 105–140; *T. aurata*, Blgr., figured, id. ibid. pl. xii, fig. 3; *T. lepidura*, p. 116, Lower Congo and Angola, *mariæ*, p. 122, pl. xi, fig. 1, Niger Delta, *rostrata*, p. 131, pl. xii, fig. 1, L. Nyassa, *monteiri*, p. 133, Congo, *livingstonii*, p. 134, pl. xi, fig. 2, Zambesi, *zebra*, p. 137, pl. xii, fig. 2, L. Nyassa, and *betsileana*, p. 139, fig., Madagascar, spp. nn., id. ibid.; *T. cabræ*, p. 51, pl. xxvii, Chiloango, *flavomarginata*, p. 123, pl. xlvi, Congo, *dolloi*, p. 123, pl. xlv, fig. 5, Congo, and *polyacanthus*, p. 124, pl. xlv, fig. 6, L. Mweru, spp. nn., id. Ann. Mus. Congo, Zool. i; *T. dardennii*, p. 93, pl. xx, fig. 1, L. Tanganyika, *rubropunctata*, p. 93, pl. xx, fig. 2, L. Tanganyika, *microlepis*, p. 94, pl. xx, fig. 3, L. Tanganyika, and *grandoculis*, p. 94, pl. xix, fig. 6, L. Tanganyika, spp. nn., id. Tr. Zool. Soc. London xv.

✓ *Steatocranus*, g. n., allied to *Tilapia*, for *S. gibbiceps*, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 52, pl. xxviii, fig. 1, Congo.

✓ *Xenochromis*, g. n., allied to *Plecodus*, for *X. hecqui*, sp. n., BOULENGER, t. c. p. 125, pl. xlvii, fig. 3, L. Tanganyika.

ANACANTHINI.

LYCODIDÆ.

Bothrocara mollis, Bean, figured by JORDAN & GILBERT, 'Fur-Seal Islands of N. Pacific' iii, p. 485, fig.

✓ *Bothrocaropsis*, g. n., allied to *Bothrocara*, Bean; GARMAN, Mem. Mus. Harvard xxiv, p. 127; *B. alalonga*, p. 127, pl. xxxii, fig. 2, Gulf of California, 905 faths., *rictolata*, p. 128, pl. xxxiii, fig. 1, off Mariato Point, 695 faths., and *elongata*, p. 129, pl. xxxiii, fig. 2, off Gulf of Panama, 695–1020 faths., spp. nn., id. ibid.

Gymnelis conorhynchus, sp. n., GARMAN, t. c. p. 131, pl. xxxi, fig. 2, off Cape Mala, 1793 faths.

Lycodopsis scaurus, sp. n., GARMAN, t. c. p. 132, pl. xxxii, fig. 1, Gulf of Panama, 458 faths.

Lycodes vahlii, Rhdt., and *frigidus*, Coll. Notes by LOENNBERG, Bih. Svenska Ak. xxiv, Afd. iv, No. 9, pp. 23 & 24; *L. gracilis*, Sars, described and figured by COLLETT, Vid. Skrift. 1899, No. 6, 3 pls.; *L. luetkenii*, Collett. Notes by HOLMQVIST, Ann. Nat. Hist. (7) iii, p. 221; *L. anguis*, p. 133, pl. xxx, fig. 1, Gulf of California, 800–859 faths., *serpens*, p. 134, Gulf of California, 905 faths., *incisus*, p. 135, pl. xxx, fig. 2, off Cape Mala, 695 faths., and *cicatrifer*, p. 136, pl. xxxi, fig. 1, off Mariato Point, 1672 faths., spp. nn., GARMAN, t. c.

Phucocœtes suspectus, sp. n., GARMAN, t. c. p. 137, pl. xxx, fig. 3, off Acapulco, Mexico, 660 faths.

Lycodapus fierasfer, Gilb., redescribed by GARMAN, t. c. p. 139.

Maynea bulbiceps, sp. n., GARMAN, t. c. p. 140, pl. E, fig. 1, Pacific Ocean, from Alaska to Gulf of Panama, 109–1005 faths.

GADIDÆ.

C. S. TOMES, Quart. J. Micr. Sci. xli, pp. 459–469, pl. xxxvi, deals with the differences in the histological structure of the teeth in the *Gadidæ*.

Gadus saida, Lepech. Note by LOENNBERG, Bih. Svenska Ak. xxiv, Afd. iv, No. 9, p. 21.

Boreogadus saida, Lepech., redescribed by SCOFIELD, 'Fur-Seal Islands of N. Pacific' iii, p. 506.

Eleginus navaga, Kölreuter, redescribed by SCOFIELD, t. c. p. 507.

√ *Microlepidium*, g. n., for *Lepidion verecundum*, Gilb., GARMAN, Mem. Mus. Harvard xxiv, p. 180; *M. grandiceps*, sp. n., id. ibid. p. 181, pl. xliii, figg. 1–5, Gulf of California, 1421 faths.

√ *Leptophycis*, g. n., allied to the preceding, for *L. filifer*, sp. n., GARMAN, t. c. p. 182, pl. xli, fig. 2, Galapagos Archipelago, 311–385 faths.

Merluccius angustimanus, sp. n., GARMAN, t. c. p. 183, pl. xli, fig. 1, off Gulf of Panama, 127–286 faths.

Antimora rhina, sp. n., GARMAN, t. c. p. 185, Gulf of Panama, 695–1020 faths.

Læmonema gracilipes, sp. n., GARMAN, t. c. p. 187, pl. xlii, fig. 1, Gulf of Panama and Galapagos Archipelago, 182–331 faths.

Physiculus rastrelliger, Gilb., redescribed by GARMAN, t. c. p. 189; *P. longipes*, sp. n., id. ibid. p. 188, pl. xlii, fig. 2, Gulf of Panama, 127–695 faths.

Bregmaceros longipes, sp. n., GARMAN, t. c. p. 191, pl. xliii, figg. 6–9, off Acapulco, Mexico, 94 faths.

OPHIDIIDÆ.

Lepophidium emmelas, Gilb., redescribed by GARMAN, Mem. Mus. Harvard xxiv, p. 142.

√ *Leucicorus*, g. n., closely allied to *Mixonus*, for *L. lusciosus*, sp. n., GARMAN, t. c. p. 146, pl. xxxviii, S. W. of Acapulco, Mexico, 1879 faths.

Mixonus caudalis, sp. n., GARMAN, t. c. p. 148, pls. xxxvi & xxxix, fig. 2, Tropical E. Pacific, 1322–1667 faths.

Dicrolene filamentosa, p. 149, pl. F, fig. 1, off W. Coast of Mexico, 511–1020 faths., *nigra*, p. 150, pl. xxxvii, fig. 2, Tropical E. Pacific, 421–1020 faths., and *pullata*, p. 152, Tropical E. Pacific, 730 faths., spp. nn., GARMAN, t. c.

Porogadus longiceps, p. 153, pl. F, fig. 2, Gulf of Panama, 134–1793 faths., *atripectus*, p. 154, pl. xxxvii, fig. 3, Tropical E. Pacific, 772–1293 faths., and *breviceps*, p. 155, Gulf of California, 859–905 faths., spp. nn., GARMAN, t. c.

Monomitopus torvus, sp. n., GARMAN, t. c. p. 157, pl. xl, fig. 1, off Mariato Point and Gulf of Panama, 458–555 faths.

Monomeropus malispinosus, sp. n., GARMAN, t. c. p. 158, pl. xl, fig. 2, Gulf of Panama, 1020 faths.

Bassozetus nasus, sp. n., GARMAN, t. c. p. 159, pl. lxxvii, W. Coast of Mexico, 1672–1879 faths.

Diplacanthopoma jordani, sp. n., GARMAN, t. c., off Chatham Is., Galapagos, 385 faths.

Bassosigas stelliferoides, Gilb., redescribed by GARMAN, t. c. p. 161.

√ *Holcomycteronus*, g. n., closely allied to *Neobythites*, GARMAN, t. c. p. 162; *H. digitatus*, sp. n., id. ibid. p. 163, pl. xxxvi, fig. 1, Gulf of California, 1201–2322 faths.

√ *Eretmichthys*, g. n., resembling *Bassozetus*, GARMAN, t. c. p. 164; *E. pinnatus*, p. 165, pl. xxxv, figg. 1–4, and *ocella*, p. 166, pl. xxxvii, fig. 1, Tropical E. Pacific, 978–1322 faths.

Catætyx simus, sp. n., GARMAN, t. c. p. 168, pl. E, fig. 2, and pl. xxxix, figg. 3–6, Tropical E. Pacific, 1270–1471 faths.

√ *Pseudonus*, g. n., resembling *Porogadus*, for *P. acutus*, sp. n., GARMAN, t. c. p. 169, pl. xxxix, fig. 1, Galapagos Archipelago.

Acanthonus spinifer, sp. n., GARMAN, t. c. p. 170, pl. F, fig. 3, N. E. of Malpelo Is., 1772 faths.

✓ *Sciadonus*, g. n., GARMAN, t. c. p. 171; *S. pedicellaris*, sp. n., id. ibid. p. 172, pl. F, fig. 4, E. of Cocos Ids., 1010 faths.

Lamprogrammus illustris, sp. n., GARMAN, t. c. p. 174, pl. xxxiv, off Cape Mala and Gulf of Panama, 511–555 faths.

✓ *Diancistrus*, g. n. (*Brotulidæ*), allied to *Dinematichthys*. DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiii, p. 743; *D. longifilis*, sp. n., id. ibid. p. 744, Lord Howe Is.

Ammodytes personatus, Gir. (*alascanus*, Cope). Note by JORDAN & GILBERT, 'Fur-Seal Islands of N. Pacific' iii, p. 443.

MACRURIDÆ.

Macrurus liolepis, Gilb., redescribed by GARMAN, Mem. Mus. Harvard xxiv, p. 199; *M. bulbiceps*, p. 194, pl. xliv, fig. 1, E. of Cocos Ids., 978 faths., *bucephalus*, p. 195, pl. xliv, fig. 2, E. Pacific, from Gulf of California to Colombia, *liraticeps*, p. 196, pl. xlv, fig. 1, Galapagos Archipelago, 885 faths., *barbiger*, p. 197, pl. xlv, fig. 2, off W. Coast of Mexico, 676 faths., *capito*, p. 200, off W. Coast of Mexico and Gulf of Panama, 458–493 faths., *leucophæus*, p. 201, Gulf of Panama, 322 faths., *boops*, p. 202, off W. Coast of Colombia, 511–546 faths., *fragilis*, p. 203, pl. xlvi, fig. 1, off Mariato Point and S. W. of Malpelo Is., 1672–1823 faths., *carminifer*, p. 204, pl. xlvi, fig. 2, Gulf of Panama, 322–1020 faths., *gracilicauda*, p. 206, pl. H, fig. 1, off W. Coast of Colombia, 286–458 faths., *orbitalis*, p. 207, pl. xlvii, fig. 1, E. of Cape Mala, 286 faths., *loricatus*, p. 208, pl. xlvii, fig. 2, off Galapagos Ids., 327–331 faths., *cuspidatus*, p. 209, Gulf of California, 905 faths., *convergens*, p. 210, pl. xlviii, fig. 1, off Panama, 695–1020 faths., *latirostratus*, p. 211, pl. xlviii, fig. 2, off W. Coast of Colombia, 322–511 faths., *anguliceps*, p. 212, pl. G, fig. 1, Gulf of California to Galapagos Ids., 695–1322 faths., *latinasutus*, p. 214, Gulf of California, 995 faths., *trichiurus*, p. 215, off Mariato Point, 555 faths., *tenuicauda*, p. 216, pl. xlix, fig. 1, Gulf of Panama, 458 faths., and *canus*, p. 217, pl. xlix, fig. 2, off W. Coast of Colombia, 153–210 faths., spp. nn., GARMAN, Mem. Mus. Harvard xxiv.

Trachyrhinus helolepis, Gilb., redescribed and figured by GARMAN, t. c. p. 218, pl. G, fig. 2.

Bogoslovius clarki, J. & G., figured by JORDAN & GILBERT, 'Fur Seals and Fur-Seal Islands' pl. lxxxiii.

✓ *Mitæocephalus*, n. n. for *Cœlocephalus*, Gilb. & Cramer, 1897, nec Agassiz: BERG, Comun. Mus. Buenos Aires i, 1898, p. 43.

PLEURONECTIDÆ.

Remarks on the migration of the eyes: A. BEHR, KB. Ver. Riga xlii, p. 174; On the ancestry of Pleuronectoids: THILO, t. c. p. 175.

MARIA SACCHI, Riv. Sci. Biol. 1899, and Boll. Mus. Genova 1899, No. 82, records various cases of anomaly in Mediterranean Pleuronectoids (*Rhombus maximus*, *Pleuronectes flesus*, *Solea vulgaris*).

J. REIBISCH, Wiss. Meeresuntersuch. (2) iv, pp. 233–248, 1 pl., and V. HENSEN, t. c. pp. 249–253, have observations on the number of eggs in *Pleuronectes platessa*. H. C. DANNEVIG, Rep. Fish. Board Scotland xvii, pp. 232–247, writes on the rate of growth.

Hippoglossoides hamiltoni, J. & G., figured by JORDAN & GILBERT, 'Fur Seals and Fur-Seal Islands' iii. pl. lxxxiv.

Veraspor moseri, J. & G., [illegible] & GILBERT, t. c. pl. lxxxv.

Hippoglossina sabanensis, sp. n., BOULENGER, Boll. Mus. Torino xiv, No. 346, p. 4, Rio Sabana, Darien; *H. vagrans*, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 221, Gulf of Panama, 66 faths.

Paralichthys adspersus, Stdr. Note by J. F. ABBOTT, P. Ac. Philad. 1899, p. 363; *P. tenuirostrum*, sp. n., WAITE, Mem. Austral. Mus. iv, p. 121, pl. xxviii, New South Wales.

Engyophrys sancti-laurenti, Jord. & Bollm., redescribed by GARMAN, t. c. p. 222.

Citharichthys maculifer, sp. n., GARMAN, t. c. p. 224, Gulf of Panama, 66 faths.

Platophrys leopardinus, Gthr., redescribed by GARMAN, Mem. Mus. Harvard xxiv, p. 225.

Monolene maculipinna, p. 226, pl. lii, figg. 1 & 2, off W. Coast of C. America, 112–210 faths., and *dubiosa*, p. 227, off Acapulco, 141 faths., spp. nn., GARMAN, t. c.

Symphurus atramentatus, Jord. & Bollm., redescribed by GARMAN, t. c. p. 229; *S. varius*, p. 228, Cocos Ids. and off Malpelo Is., 52–112 faths., and *microlepis*, p. 230, pl. lii, fig. 3, Gulf of Panama, 286 faths., spp. nn., id. ibid.

Cynoglossus microps, sp. n., STEINDACHNER, Széchenyi's Voy. E. Asia ii, p. 655, Hong Kong.

PHYSOSTOMI.

SILURIDÆ.

M. JAQUET, Bull. Soc. Bucarest viii, pp. 129–179, 376–392, pls. i–xiii & xvi–xxiii, has a memoir on the anatomy of *Silurus glanis*, L. The same author, t. c. pp. 786–791, also describes an example of the fish with mutilated tail and reproduced caudal fin. M. JUGE, Rev. Suisse Zool. vi, pp. 1–171, writes on the cerebral nerves and musculature of the head of the same Fish.

Clarias lazera, C. & V. Remarks on living specimens: BOULENGER, P. Z. S. 1899, p. 715; *C. longiceps*, sp. n., BOULENGER, Ann. Mus. Congo i, p. 103, pl. xli, fig. 1, Lower Congo.

√*Euristhmus*, g. n., for *Plotosus elongatus*, Cast., and *Cnidoglanis lepturus*, Gthr. DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiv, p. 154.

√*Ostophycephalus*, g. n., allied to the preceding: DOUGLAS OGILBY, t. c. p. 155; *O. duriceps*, sp. n., id. ibid. p. 156, St Vincent's Gulf, S. Australia.

Eutropius laticeps, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 105, pl. xli, fig. 2, L. Leopold II, Congo.

√*Parailia*, g. n., allied to *Siluranodon* and *Ailia*: BOULENGER, t. c. p. 105; *P. congica*, sp. n., id. ibid. p. 106, pl. xli, fig. 3, Congo.

Ictalurus furcatus, Lesueur, and *anguilla*, Everm. & Kend. Notes by EVERMANN, Rep. U. S. Fish. Comm. f. 1898, p. 305.

Chrysichthys, Blkr. Notes on the West African species: GÜNTHER, P. Z. S. 1899, p. 718; *C. buettikoferi*, Stdr., figured, id. ibid. pls. xli & xlii, fig. A; *C. walkeri*, p. 720, fig., Gold Coast, *ogowensis*, p. 723, Ogowe, *coriscanus*, p. 724, Corisco Is., *lagoensis*, p. 725, fig., Lagos, *persimilis*, p. 727, fig., pl. xliii, Gaboon, *kingsleyæ*, p. 728, fig., pl. xlv, fig. A, Ogowe, and *camaronensis*, p. 729, pl. xliv, Camaroons, spp. nn., id. ibid.; *C. wagenaari*, p. 39, pl. xx, fig. 1, *punctatus*, p. 107, pl. xlii, fig. 1, and *delhezi*, p. 108, pl. xlii, fig. 2, spp. nn., BOULENGER, t. c., Congo.

√*Chrysobagrus*, g. n., for *Chrysichthys acutirostris*, Gthr., and allies. BOULENGER, t. c. p. 40; *C. brevibarbis*, p. 40, pl. xxi, fig. 1, and *longibarbis*, p. 41, pl. xxi, fig. 2, spp. nn., id. ibid., Congo.

✓ *Gephyroglanis*, g. n., allied to *Chrysichthys* but without teeth on the palate. BOULENGER, t. c. p. 42; *G. congicus*, p. 42, pl. xx, fig. 2, and *longipinnis*, p. 109, pl. xli, fig. 4, spp. nn., id. ibid., Congo.

Arius physacanthus, sp. n., VAILLANT, Bull. Mus. Paris 1899, p. 155, Mahury B., French Guiana; *A. iheringi*, sp. n. (foss.), A. S. WOODWARD, Revist. Mus. Paulista iii, p. 64, pl. ii, fig. 1, and pl. iii, fig. 2, Tertiary of Taubaté, S. Paulo, Brazil.

Synodontis caudalis, p. 44, pl. xxii, fig. 1, *depauwi*, p. 45, pl. xxii, fig. 2, *acanthomias*, p. 46, pl. xxiii, *nummifer*, p. 47, pl. xxiv, *decorus*, p. 49, pl. xxv, *soloni*, p. 110, pl. xliii, fig. 1, and *ornatipinnis*, p. 111, pl. xliii, fig. 2, spp. nn., BOULENGER, t. c., Congo.

Malopterurus electricus, L. On the electric organ: GOTCH, Science (2) x, p. 963. E. BALLOWITZ brings out a large work on the subject (Jena, 1899, 4to).

Acestra (*Forlowella*) *kneri*, Stdr., recorded from the R. Parana by BERG, Comun. Mus. Buenos Aires i, p. 165.

Pygidium schmidti, Berg, = *Trichomycterus borellii*, Blgr. BERG, Comun. Mus. Buenos Aires i, p. 166.

Vandellia cirrhosa, Vand. On the supposed penetration of this fish in the human urethra: C. JOBERT, Arch. parasit. i, 1898, p. 493.

SCOPELIDÆ.

G. BRANDES, Zeitschr. Naturw. lxxi, pp. 447–452, remarks on the luminous organs of *Argyropelecus* and *Chauliodus*.

Synodus simulans, p. 251, pl. L, fig. 3, off Cocos Ids., and *acutus*, p. 252, S. E. of Cape Mala, 56–127 faths., spp. nn., GARMAN, Mem. Mus. Harvard xxiv.

Chlorophthalmus mento, sp. n., GARMAN, t. c. p. 253, pl. liv, fig. 1, Gulf of Panama, 206–286 faths.

Scopelengys dispar, sp. n., GARMAN, t. c. p. 254, pl. liv, fig. 2, Gulf of Panama, 695–1832 faths.

Bathypterois ventralis, p. 256, pl. lv, fig. 1, off W. Coast of Mexico, 660–880 faths., and *pectoralis*, p. 257, pl. K, fig. 1, S. of Malpelo and Gulf of Panama, 885–1132 faths., spp. nn., GARMAN, t. c.

Ipnops agassizii, sp. n., GARMAN, t. c. p. 259, pl. H, fig. 2, off W. Coast of Mexico, 1360 faths.

Myctophum oculeum, p. 260, pl. lvi, fig. 2, off Mariato Point, 1772 faths., *tenuiculum*, p. 262, pl. J, fig. 5, S. of Mariato Point, 100 faths., *luminosum*, p. 263, pl. lv, fig. 2, Galapagos Archipelago, 421 faths., *aurolaternatum*, p. 264, pl. lv, fig. 3, off Malpelo and Culpepper Ids., 918–1993 faths., *nitidulum*, p. 266, pl. lvi, fig. 3, E. Pacific, 100 faths., *laternatum*, p. 267, pl. lvi, fig. 1, W. of Mexico and C. America, 1168 faths., and *atratum*, p. 268, Gulf of California, 1216 faths., spp. nn., GARMAN, t. c.

√ *Nematonotus*, g. n., for *Clupea bottæ*, Pict. & Humb. (foss.) = *Pseudoberyx longispina*, J. W. Davis: A. S. WOODWARD, Ann. Nat. Hist. (7) iv, p. 318.

Pantopholis dorsalis, J. W. Davis (foss.). Note on the type specimen: A. S. WOODWARD, t. c. p. 320.

CYPRINIDÆ.

J. NUSBAUM, Anat. Anz. xvi, pp. 209–223, figg., has a communication on the anatomical connexion between the organ of hearing and the air-bladder in *Cobitis fossilis*.

Labeo cyclorhynchus, p. 98, pl. xl, fig. 1, and *nasus*, p. 99, pl. xl, fig. 2, spp. nn., BOULENGER, Ann. Mus. Congo, Zool. i, Congo.

Capoëta capoëta, Güld. Note by L. BERG, Mittheil. Kaukas. Mus. i, p. 42; *C. fundulus*, Pall., figured by KAMENSKY, Cyprin. Kaukas. pls. i & ii; *C. tinca*, Heck., redescribed by DERJUGIN, Annuaire Mus. St. Petersb. 1899, p. 155; *C. gracilis*, Keyserl. Notes by GÜNTHER, J. Linn. Soc. xxvii, p. 383.

Barbus trispilus, Blkr. Note by GÜNTHER, P. Z. S. 1899, p. 730; *B. caucasicus*, Kessl. (?). Notes by GÜNTHER, J. Linn. Soc. xxvii, p. 385; *B. caucasicus*, Kessl., p. 48, *cyri*, De Fil., p. 51, *bulatmai*, Kessl., p. 54, and *mursa*, Güld., p. 57, notes by L. BERG, Mittheil. Kaukas. Mus. i; *B. bulatmai*, Habl., pl. iv, and *ciscaucasicus*, Kessl., pl. v, figured by KAMENSKY, Cyprin. Kaukas.; *B. tauricus*, Kessl., vars. nn. *rionica*, p. 128, pl. iii, Rion, Black Sea, and *artwinica*, p. 129, Artwin, Black Sea, *B. cyri*, De Fil., vars. nn. *tiflissica*, p. 139, and *chaldanica*, p. 141, Caucasus, KAMENSKY, t. c.; *B. taporovanicus*, p. 142, pl. vi, *bortschailicus*, p. 144, pl. vi, *zurzunicus*, p. 148, and *angustatus*, p. 153, spp. nn., id. ibid., Caucasus; *B. congicus* and *pleuropholis*, spp. nn., BOULENGER, Ann. Mus. Congo, Zool. i, p. 100, pl. xl, figg. 3 & 4, Congo.

Schizothorax, Gthr. Non-eviscerated specimens considered poisonous as food. THILO, KB. Ver. Riga xlii, p. 158.

Diptychus crassilatris, sp. n., STEINDACHNER, Széchenyf's Voy. E. Asia ii, p. 653, Szi-ning-fu, China.

Gobio persa, sp. n., GÜNTHER, J. Linn. Soc. xxvii, p. 386, pl. xxiii, fig. B, Gader Chai, N. W. Persia.

Pimephales notatus, Raf. On individual variations: J. H. VORIS, P. Indiana Ac. 1899, p. 233.

Ictiobus bubalus, Raf. Note by EVERMANN, Rep. U. S. Fish. Comm. f. 1898, p. 307.

Notropis nux, Everm., *chamberlaini*, Everm., and *louisianæ*, Everm. Notes by EVERMANN, t. c. pp. 307 & 308; *N. muskoka*, sp. n., S. E. MEEK, Field Mus. Zool. i, p. 308, L. Muskoka, Ontario.

Leuciscus ulanus, p. 387, pl. xxiv, fig. A, Ula, N. W. Persia, and *gaderanus*, p. 388, pl. xxiv, fig. B, Gader Chai, N. W. Persia, spp. nn., GÜNTHER, J. Linn. Soc. xxvii; *L. farnumi*, p. 179, Delai Nor, Mongolia, and *costatus*, p. 180, Tan lan Ho, China, spp. nn., H. W. FOWLER, P. Ac. Philad. 1899.

Squalius turcicus, De Fil., redescribed by L. BERG, Mittheil. Kaukas. Mus. i, p. 59; *S. leucoides*, De Fil., redescribed and figured by DERJUGIN, Annuaire Mus. St. Petersb. 1899, p. 160, pl. ix, fig. 1.

Chondrostoma colchicum, sp. n. (KESSLER), DERJUGIN, Annuaire Mus. St. Petersb. 1899, p. 164, pl. ix, figg. 2 & 3, Transcaucasia.

Baritius, Ham. Buch. (=*Opsaridium*, Ptrs., *Pelotrophus*, Gthr., *Engraulicypris*, Gthr.). Synopsis of the African species: BOULENGER, Ann. Mus. Congo, Zool. i, p. 102; *Engraulicypris pinguis*, Gthr. = *B. sardella*, Gthr., id. ibid. p. 103; *B. weeksii*, p. 102, Congo, *kingsleyæ*, p. 103, Ogowe, and *weynsii*, p. 103, Congo, spp. nn., id. ibid.

Abramis persa, Gmel. On a variety from Transcaucasia: DERJUGIN, Annuaire Mus. St. Petersb. 1899, p. 167; *A. urmianus*, sp. n., GÜNTHER, J. Linn. Soc. xxvii, p. 389, pl. xxiii, fig. A, Urmi R. and Gader Chai, N. W. Persia.

Alburnus filippii, Kessl., redescribed by GÜNTHER, t. c. p. 390.

Chelæthiops, g. n., allied to *Chela* and *Pelecus*, for *C. elongatus*, sp. n., BOULENGER, t. c. p. 101, pl. xl, fig. 5, Congo.

Nemachilus persa, Heck., redescribed by GÜNTHER, t. c. p. 391; *N. barbatulus*, L., var. n. *caucasicus*, L. BERG, Mittheil. Kaukas. Mus. i, p. 67, Caucasus; *N. brandtii*, Kessl., redescribed, id. ibid. p. 70. *N. dixoni* and *pechiliensis*, spp. nn., H. W. FOWLER, P. Ac. Philad. 1899, p. 181, Tan lan Ho, China.

Cobitis sinensis, Sauv. and Dabry, redescribed by H. W. FOWLER, t. c. p. 182; *C. aurata*, De Fil., redescribed by L. BERG, t. c. p. 73.

Homaloptera microstoma, sp. n., BOULENGER, Ann. Nat. Hist. (7) iv, p. 228, Sarawak.

✓ *Glaniopsis*, g. n., allied to *Homaloptera*, for *G. hanitschi*, sp. n., BOULENGER, t. c. p. 228, Sarawak.

CHARACINIDÆ.

Synopsis of the genera of the subfamily *Ichthyoborinæ*: BOULENGER, Ann. Mus. Congo, Zool. i, p. 74.

Eugnathichthys macroterolepis, sp. n., BOULENGER, t. c. p. 75, pl. xxxiv, fig. 1, Chiloango.

✓ *Paraphago*, g. n., intermediate between *Eugnathichthys* and *Phago*, for *P. rostratus*, sp. n., BOULENGER, t. c. p. 76, pl. xxxiv, fig. 2, L. Leopold II, Congo.

Phago intermedius, sp. n., BOULENGER, t. c. p. 77, pl. xxxiv, fig. 3, Congo.

✓ *Neoborus*, g. n., allied to *Ichthyoborus*, for *N. ornatus*, sp. n., BOULENGER, t. c. p. 78, pl. xxxiv, fig. 4, Congo.

Alestes fuchsii, p. 83, pl. xxxvi, fig. 1, Congo, *lemairii*, p. 84, pl. xxxvi, fig. 2, L. Mweru, *bimaculatus*, p. 85, pl. xxxvi, fig. 3, L. Leopold II, Congo, and *grandisquamis*, p. 85, pl. xxxv, fig. 3, Congo, spp. nn., BOULENGER, t. c.

✓ *Micralestes*, g. n., for *Alestes acutidens*, Ptrs., and allies, BOULENGER, t. c. p. 86; *M. humilis*, p. 87, pl. xxxvi, fig. 4, *altus*, p. 88, pl. xxxvi, fig. 5, and *interruptus*, p. 88, pl. xxxvi, fig. 6, spp. nn., id. ibid., Congo.

Petersius, Hilgend. Synopsis of the species: BOULENGER, t. c. p. 89; *P. occidentalis*, sp. n., GÜNTHER, P. Z. S. 1899, p. 731, pl. xlv, fig. B, Gold Coast; *P. caudalis*, p. 89, pl. xxxvii, fig. 3, *leopoldianus*, p. 90, pl. xxxvii, fig. 4, *hilgendorfi*, p. 91, pl. xxxvii, fig. 5, and *modestus*, p. 92, pl. xxxvii, fig. 6, spp. nn., BOULENGER, t. c., Congo.

Tetragonopterus avus and *ligniticus*, spp. nn. (foss.), A. S. WOODWARD, Revist. Mus. Paulista iii, pp. 66 & 67, pls. iii & iv, figg. 3–5, Tertiary of Taubaté, S. Paulo, Brazil.

Piabucina festæ, sp. n., BOULENGER, Boll. Mus. Torino xiv, No. 346, p. 1, Laguna della Pita, Darien.

Anacyrtus (*Rhæboides*) *bonariensis*, Stdr., and *prognathus*, Blgr. Notes by BERG, Comun. Mus. Buenos Aires i, pp. 95 & 96.

Distichodus altus, p. 80, pl. xxxv, fig. 1, and *noboli*, p. 81, pl. xxxv, fig. 2, spp. nn., BOULENGER, Ann. Mus. Congo, Zool. i, Congo.

Neolebias, Stdr., is closely allied to *Nannæthiops*, Gthr.: BOULENGER, t. c. p. 114; *N. trilineatus*, sp. n., id. ibid., Congo.

Bryconæthiops microstoma, Gthr. Variety figured by BOULENGER, t. c. pl. xxxvii, fig. 1; *B. yseuxi*, sp. n., id. ibid. p. 32, pl. xxxvii, fig. 2, Congo.

Citharinus, M. & T. Synopsis of the species: BOULENGER, t. c. p. 93; *C. macrolepis*, p. 93, pl. xxxviii, and *gibbosus*, p. 94, pl. xxxix, spp. nn., id. ibid., Congo.

Serrasalmo marginatus, Val. Note by BERG, Comun. Mus. Buenos Aires i, p. 166.

Curimatus latior, Spix. Recorded from the Rio de la Plata by BERG, t. c. p. 94.

CYPRINODONTIDÆ.

Rivulus geayi, sp. n., VAILLANT, Bull. Mus. Paris 1899, p. 156, French Guiana.

Haplochilus elegans and *singa*, spp. nn., BOULENGER, Ann. Mus. Congo, Zool. i, p. 113, pl. xlvii, figg. 1 & 2, Congo.

AMBLYOPSIDÆ.

Remarks by C. H. EIGENMANN, Science (2) ix, pp. 280–282, figg. & 370.

C. H. EIGENMANN, Arch. Entwickmech. viii, pp. 545–617, figg., pls. xi–xv, has a study of the eyes of the blind Fishes of North America. Also P. Indiana Ac. 1899, pp. 239–241.

C. H. EIGENMANN & A. C. YODER, P. Indiana Ac. 1899, pp. 242–247, figg., write on the ear and hearing of blind Fishes.

Typhlichthys subterraneus, Gir. Notes by EIGENMANN, t. c. p. 247, figg.

Troglichthys, g. n., for *Typhlichthys rosæ*, Eig., EIGENMANN, Science (2) ix, p. 282.

UMBRIDÆ.

Umbra crameri, Müll. Remarks on its movements: KATHARINER, Zool. Anz. xxii, p. 346.

SCOMBRESOCIDÆ.

Exocœtus ilma, sp. n., F. E. CLARKE, Tr. N. Zealand Inst. xxxi, p. 94, pl. vi, New Zealand.

Exocœtoides minor, J. W. Davis (foss.). Note on the type specimen: A. S. WOODWARD, Ann. Nat Hist. (7) iv, p. 319.

GALAXIIDÆ.

On the New Zealand species: F. E. CLARKE, Tr. N. Zealand Inst. xxxi, pp. 78–91.

Galaxias kokopu, *postvectis*, and *robinsonii*, spp. nn., F. E. CLARKE, t. c. pp. 88 & 89, pls. iv & v, New Zealand; *G. occidentalis*, sp. n., DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiv, p. 157, Streams south of Perth, W. Australia.

MORMYRIDÆ.

Revision of the genera and species: BOULENGER, P. Z. S. 1898, pp. 775–821.

Mormyrops parvus, p. 65, pl. xxxi, fig. 2, *curtus*, p. 66, pl. xxxii, fig. 1, and *nigricans*, p. 66, pl. xxxii, fig. 2, spp. nn., BOULENGER, Ann. Mus. Congo, Zool. i, Congo.

Marcusenius nigripinnis, p. 67, pl. xxxiii, fig. 1, and *pulverulentus*, p. 68, pl. xxxiii, fig. 2, spp. nn., BOULENGER, t. c., Congo.

Stomatorhinus, Blgr. Synopsis of the Species: BOULENGER, t. c. p. 69; *S. puncticulatus*, p. 69, pl. xxxi, fig. 3, *humilior*, p. 70, pl. xxxi, fig. 4, *corneti*, p. 71, pl. xxxi, fig. 5, and *polylepis*, p. 71, pl. xxxi, fig. 6, spp. nn., id. ibid., Congo.

Gnathonemus rhynchophorus, Blgr., skeleton figured by BOULENGER, P. Z. S. 1898, pl. li; *G. livingstonii*, sp. n., id. ibid. p. 803, R. Rovuma; *G. leopoldianus*, p. 72, pl. xxxiii, fig. 3, *schilthuisiæ*, p. 73, pl. xxxiii, fig. 4, and *kutuensis*, p. 74, pl. xxxiii, fig. 5, spp. nn., id. Ann. Mus. Congo i, Congo.

STERNOPTYCHIDÆ.

Chauliodus barbatus p. 271, pl. x, fig. 2, off Mariato Point and Malpelo *dentatus*, p. 273, Society Ids., spp. nn.,

Sternoptyx obscura, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 232, pl. liii, fig. 1, E. Pacific Ocean, 134–1832 faths.

Argyropelecus lychnus, p. 234, pl. J, fig. 1, E. Pacific Ocean, 144–2069 faths., *caninus*, p. 235, Indian Ocean off Port Louis Harbour, and *affinis*, p. 237, N. W. Atlantic, 683 faths., spp. nn., GARMAN, t. c.

Polyipnus laternatus, sp. n., GARMAN, t. c. p. 238, off Barbados, 221 faths.

Valenciennellus stellatus, sp. n., GARMAN, t. c. p. 239, pl. liii, fig. 2, off Coast of California, 300 faths.

Maurolicus oculatus, p. 241, pl. liii, fig. 3, off Coast of California, 300 faths., and *lucetius*, p. 242, pl. J, fig. 2, E. Pacific Ocean, 100–1832 faths., spp. nn., GARMAN, t. c.

√ *Lychnopoles*, g. n., closely allied to *Gonostoma*, for *L. argenteolus*, sp. n., GARMAN, t. c. p. 244, pl. liii, fig. 4, Gulf of Panama, 210–286 faths.

Cyclothone signata, p. 246, pl. J, fig. 3, Gulf of Panama, 1793 faths., and *acclinidens*, p. 247, pl. J, fig. 4, E. Pacific Ocean, 122–2413 faths., spp. nn., GARMAN, t. c.

STOMIATIDÆ.

Stomias colubrinus, p. 275, pl. lvii, fig. 1, off Mariato Point, 1672 faths., *hexagonatus*, p. 276, pl. lvi, fig. 5, off Guatemala and Gulf of Panama, and *atriventer*, p. 277, pl. lvi, fig. 4, Gulf of California, 1218 faths., spp. nn., GARMAN, Mem. Mus. Harvard xxiv.

√ *Dactylostomias*, g. n., for *D. filifer*, sp. n., GARMAN, t. c. p. 279, pl. lvi, fig. 6, off W. Coast of Mexico and Guatemala, 660–2232 faths.

Idiacanthus antrostomus, Gilb., redescribed by GARMAN, t. c. p. 280.

SALMONIDÆ.

J. F. MOSER, Bull. U. S. Fish. Comm. xviii, p. 1, figg., reports on the Salmon (*Salmo* and *Oncorhynchus*) of Alaska.

H. LUNDBORG, Morphol. Jahrb. xxvii, pp. 242–262, figg., pl. xi, has observations on the development of the head in *Salmo salar*.

B. NÖLDEKE, Zeitschr. wiss. Zool. lxv, pp. 517–528, pl. xxvii, writes on the origin of the endocardial epithelium in *Salmo salar*.

Salmo, L. J. A. HARVIE-BROWN, Ann. Scott. Nat. Hist. 1899, p. 75, has notes on some varieties of the Scottish species; *S. salar*, L. Biological observations in Holland: P. P. C. HOEK, Tijdschr. Nederland. Dierk. Ver. (2) vi, p. 158, pl. vi; *S. trutta*, L. On the existence of a single species in the Caucasus: KAWRAISKY, in RADDE, Samml. Kaukas. Mus. i, Zool. p. 327; *S. fario*, L. C. G. SELIGMANN, Journ. Pathol. and Bacteriol. 1898, describes and figures a trout with a supernumerary rayed dorsal fin situated immediately behind the head; *S. mykiss*, Walb., figured by JORDAN & GILBERT, 'Fur Seals and Fur-Seal Islands' iii, pl. xliii; *S. umbla*, L., var. *stagnalis*, Fabr. Notes by LOENNBERG, Bih. Svenska Ak. xxiv, Afd. iv, No. 9, p. 28; *S. clarki jordani* and *declivifrons*, varr. nn., MEEK, Field Mus. Zool. i, pp. 229 & 230, Lake Southerland, Washington Territory; *S. bathæcetor*, sp. n., id. ibid. p. 227, Lake Crescent, Washington Territory.

Salvelinus malma, Walb., and *kundscha*, Pall., figured by JORDAN & GILBERT, t. c. pls. xliv & xlv.

Coregonus labradoricus, Rich. = *C. clupeiformis*, Mitch., T. H. BEAN, Science (2) ix, p. 416.

Osmerus albatrossis, J. & G., figured by JORDAN & GILBERT, 'Fur Seals and Fur-Seal Islands' iii, pl. xlvi.

Therobromus callorhini, Lucas, figured by JORDAN & GILBERT, t. c. pl. xlvii.

Argyrosomus alascanus, Scofield, figured in JORDAN'S 'Fur Seals and Fur-Seal Islands' iii, pl. xlii.

OSTEOGLOSSIDÆ.

Heterotis niloticus, Ehrenb., figured in HEMPRICH & EHRENBERG's Symbolæ physicæ, Zool. pl. i, and skeleton and anatomy, Zoot. pls. viii & ix.

CLUPEIDÆ.

Clupea alosa, L., and *C. finta*, L. Observations on the variations and habits in the Lower Rhine: P. P. C. HOEK, Tijdschr. Nederland. Dierk. Ver. (2) vi, p. 182, pls. vii–x; *C. fimbriata*, Kner and Stdr. Note by J. F. ABBOTT, P. Ac. Philad. 1899, p. 332.

Potamalosa notacanthoides, Stdr. Note by J. F. ABBOTT, t. c. p. 333.

Pellona (*Ilisha*) *orbigniana*, Val. Note by BERG, Comun. Mus. Buenos Aires i, p. 167.

Pellonula acutirostris, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 63, pl. xxxvi, fig. 7, Congo.

√ *Odaxothrissa*, g. n., allied to *Pellonula*, for *O. losera*, sp. n., BOULENGER, t. c. p. 64, pl. xxxi, fig. 1, Congo.

Stolephorus tapirulus, Cope. Note by J. F. ABBOTT, t. c. p. 335. *S. gilberti* and *garmani*, spp. nn., EVERMANN & MARSH, Rep. U. S. Fish Comm. f. 1899, p. 352, Puerto Rico.

Engraulis ringens, Jen. Note by J. F. ABBOTT, t. c. p. 336.

Lewisia ovalis, J. W. Davis (foss.) = *Spaniodon brevis*, Pict. & Humb., A. S. WOODWARD, Ann. Nat. Hist. (7) iv, p. 319.

Osmeroides maximus, sp. n. (foss.), WITTICH, Notizbl. Ver. Erdk. Darmstadt (4) xviii, 1897, p. 43, pl. v, figg. 1–3, Middle Oligocene, Mayence Basin.

√ *Leptichthys*, g. n., related to *Osmeroides*, Ag., for *L. agilis*, sp. n. (foss.), A. STEWART, Amer. Geol. xxiv, p. 71, Cretaceous of Kansas.

Pachyrhizodus minimus, sp. n. (foss.), A. STEWART, Kansas quart. viii, p. 37, fig., Cretaceous of Kansas.

√ *Ctenothrissa*, g. n., for *Beryx vexillifer*, Pict., *radians*, Ag., and *microcephalus*, Ag. (foss.), A. S. WOODWARD, Ann. Nat. Hist. (7) iii, p. 490.

Pseudoberyx, Pict. & Humb. (foss.), is allied to the preceding genus. A. S. WOODWARD, t. c. p. 491.

SAUROCEPHALIDÆ.

Remarks by O. P. HAY, Amer. Journ. (4) vii, p. 299, figg., and Ann. Nat. Hist. (7) iii, p. 480.

Saurocephalus pamphagus, sp. n. (foss.), id. ibid. pp. 303 & 486, fig., Cretaceous, Kansas.

ALEPOCEPHALIDÆ.

Bathytroctes alvifrons, p. 286, pl. lviii, fig. 2, S. of Cape Mala and N. of Culpepper Is., 1360–1793 faths., *alveatus*, p. 287, pl. lviii, fig. 1, S. of Malpelo Is. and E. of Chatham Is., 1132–1322 faths., and *inspector*, p. 288, pl. M, fig. 1, E. of Cocos Is., 1471 faths., spp. nn., GARMAN, Mem. Mus. Harvard xxiv.

√ *Leptochilichthys*, g. n., allied to *Bathytroctes*, GARMAN, t. c. p. 284; *L. agassizii*, sp. n., id. ibid. p. 285, pl. lviii, fig. 3, off Galera Point, 1573 faths.

Narcetes pluriserialis, sp. n., GARMAN, t. c. p. 289, pl. lvii, fig. 3, off Cocos Ids., 1010 faths.

Alepocephalus asperifrons, p. 291, pl. lix, fig. 1, Gulf of Panama, 782–1020 faths., *convexifrons*, p. 292, pl. lix, fig. 2, off Acapulco, Mexico, 660 faths., and *fundulus*, p. 293, pl. lvii, fig. 2, Gulf of Panama and

between Cocos Ids. and Mariato Point, 1270–1672 faths., spp. nn., GARMAN, t. c.

Leptoderma affinis, sp. n., ALCOCK, Descr. Cat. Deep-Sea Fishes Ind. Mus. p. 182, Bay of Bengal, 753 faths.

HALOSAURIDÆ.

Halosaurus attenuatus, p. 296, pl. lx, fig. 1, N. of Culpepper Is., 1360 faths., and *radiatus*, p. 298, pl. lx, fig. 2, Gulf of Panama, 259–511 faths., spp. nn., GARMAN, Mem. Mus. Harvard xxiv.

HOPLOPLEURIDÆ.

√ *Leptecodon*, g. n., near *Aspidopleurus*, Pict. & Humb., for *L. rectus*, sp. n. (foss.), WILLISTON, Kansas quart. viii, p. 113, pl. xxvi, Cretaceous of Kansas.

MURÆNIDÆ.

Anguilla vulgaris, Turt. P. GODET, Bull. Soc. Neuchatel xxvi, p. 78, pl. —, and R. CHEVREL, Bull. Soc. Norm. (5) i, 1898, p. 201, review our knowledge of the reproduction and development. On the spawning season on the Coast of New York: E. G. BLACKFORD, Science (2) ix, p. 740; GILL, t. c. p. 820.

Uroconger varidens, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 304, pl. lxi, fig. 1, off Mariato Point and off Cape S. Francisco, 259–555 faths.

Congromuræna prorigera, Gilb., redescribed by GARMAN, t. c. p. 307; *C. caudalis*, sp. n., id. ibid. p. 305, off Cape Mala.

Congrosoma evermanni, sp. n., GARMAN, t. c. p. 308, pl. lxii, fig. 1, off Cape Mala, 182 faths.

Nettastoma melanurum, Raf., and *N. saga*, Risso. On their distinctive characters: FACCIOLA, Riv. Ital. Sci. Nat. xix, p. 29.

√ *Eomyrus*, g. n., near *Myrus*, for *E. dolloi*, sp. n. (foss.), STORMS, Mem. Soc. Belge Geol. x, 1898, p. 225, pl. v, figg. 8 & 9 & pl. vi, Upper Eocene, near Brussels.

Ophichthys frontalis, p. 309, Gulf of Panama, 153–242 faths., and *biserialis*, p. 311, Chatham Is., Galapagos, spp. nn., GARMAN, t. c.

Myrichthys pantostigmius, sp. n., JORDAN & MCGREGOR, Rep. U. S. Fish. Comm. f. 1898, p. 274, pl. iv, Clarion Is.

Pisodontophis peninsulæ, Gilb., redescribed by GARMAN, t. c. p. 311.

Echidna cocosa, p. 313, and *scabra*, p. 314, spp. nn., GARMAN, t. c., Cocos Ids.

Xenomystax rictus, sp. n., GARMAN, t. c. p. 315, pl. N, off W. Coast of Mexico and C. America and Galapagos Ids., 322–511 faths.

Chlopsis gilberti, sp. n., GARMAN, t. c. p. 316, pl. lxii, fig. 2, Gulf of Panama, 511 faths.

Venefica ocella, p. 318, pl. lxi, fig. 2, off Gulf of Panama, 1067 faths., and *tentaculata*, p. 319, pl. M, fig. 2, off W. Coast of Mexico, 660–978 faths., spp. nn., GARMAN, t. c.

Serrivomer sector, sp. n., GARMAN, t. c. p, 320, pl. lxiii, E. Pacific Ocean, 134–1672 faths.

Labichthys bowersii, sp. n., GARMAN, t. c. p. 323, pl. lxiv, fig. 1, between Cocos Ids. and Mariato Point, 1471–2232 faths.

Nemichthys fronto, sp. n., GARMAN, t. c. p. 324, pl. lxv, fig. 1, Gulf of Panama and Gulf of California, 458–1588 faths.

Lycodontis jordani, sp. n., EVERMANN & MARSH, Rep. U. S. Fish. Comm. f. 1899, p. 352, Puerto Rico.

Atopichthys esunculus, p. 327, pl. lxv, fig. 2, *cinctus*, p. 329, pl. lxvi, fig. 2, *dentatus*, p. 330, pl. lxvi, fig. 3, *falcidens*, p. 331, pl. lxvi, fig. 4, *acus*, p. 332, pl. lxvi, fig. 5, *ophichthys*, p. 333, pl. lxvii, fig. 1, *cingulus*, p. 334, pl. lxvii, fig. 2, *lychnus*, p. 335, pl. lxvii, fig. 3, *obtusus*, p. 337, pl. lxvii, fig. 4, and *longidens*, p. 338, pl. lxvii, fig. 5, spp. nn., GARMAN, t. c., E. Pacific Ocean.

INCERTÆ SEDIS.

Plethodus, Dixon (foss.). Remarks on various remains of *P. expansus*, Dix., and suggestions as to the systematic position of this fish, which is believed to be probably allied to the *Osteoglossidæ*, *Elopidæ*, and *Albulidæ*. A. S. WOODWARD, Ann. Nat. Hist. (7) iii, p. 353, pls. xiii & xiv.

Phasgonodus australis, sp. n. (foss.), AMEGHINO, Sin. geol.-pal., Suppl. p. 10, Cretaceous of Patagonia.

PLECTOGNATHI.

O. THILO, Anat. Anz. xvi, pp. 73–87, pls. i & ii, writes on the air-sacs of Plectognaths.

√ *Halimochirus*, g. n. (*Triacanthinæ*), *Centriscus*-like in shape, for *H. centriscoides*, sp. n., ALCOCK, P. Asiat. Soc. Bengal 1899, p. 78, Gulf of Manar, 143 faths.

Alutera monoceros, Osb. A specimen from the coast of Massachusetts described and figured by H. M. SMITH, Bull. U. S. Fish. Comm. xviii, p. 273, pl. lxiv.

Monacanthus setosus, sp. n., WAITE, Mem. Austral. Mus. iv, p. 91, pl. xvi, New South Wales; *M. alternans*, sp. n. (?), DOUGLAS OGILBY, P. Linn. Soc. N. S. Wales xxiii, p. 740, Lord Howe Is.

Cantherines carolæ, sp. n., JORDAN & MCGREGOR, Rep. U. S. Fish. Comm. f. 1898, p. 281, pl. vi, Socorro Is.

Tetrodon mbo, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 56, pl. xxix, Congo.

GANOIDEI.

E. P. ALLIS, Anat. Anz. xvi, pp. 49–72, discusses the homologies of the squamosal, intercalar, exoccipital, and extrascapular bones of fishes, with special reference to *Amia calva*.

L. MAGGI, Rend. Ist. Lombardo (2) xxxi, p. 1487, pl. v, remarks on the homologies of the roof-bones of the skull in Sturgeons.

S. MOLLIER, Anat. Hefte I, viii, 1897, pp. 1–74, figg., pls. i–x, investigates the development of the paired fins of *Acipenser sturio*.

W. SALENSKI, Annuaire Mus. St. Petersb. 1899, pp. 299–324, pls. xiv–xvi, has a paper in Russian on the development of the vertical fins and dorsal scutes in Sturgeons.

E. P. ALLIS, Anat. Anz. xv, pp. 364–379, replies to some of COLE'S criticisms of his work on the cranial nerves and sense-organs of *Amia calva*.

M. JAQUET, Bull. Soc. Bucarest viii, p. 791, fig., describes an *Acipenser ruthenus* with a supplementary lateral line.

A. C. EYCLESHYMER, Anat. Anz. xvi, pp. 529–536, figg., has a communication on the cleavage of the egg of *Lepidosteus osseus*.

Amia anglica and *colenutti*, spp. nn. (foss.), E. T. NEWTON, Quart. J. Geol. Soc. lv, pp. 3 & 8, pl. i, Oligocene, Isle of Wight.

Amiopsis (?) *dartoni*, sp. n. (foss.), EASTMAN, Bull. Geol. Soc. Amer. x, p. 406, pl. xlviii, figg. 1 & 2, Jurassic of South Dakota.

Pholidophorus americanus, sp. n. (foss.), EASTMAN, Bull. Geol. Soc. Amer. x, p. 398, pls. xlv–xlvii, Jurassic of South Dakota.

Pachycormus, Ag. (foss.). On remains from the Upper Lias of Vassy, France: SAUVAGE, Bull. Soc. Autun xi, p. 193.

√ *Grypodon*, n. n. for *Ancistrodon*, Rosmer nec Pal. de Beauv. HAY, Amer. Natural. xxxiii, p. 790.

Pycnodus phaseolus, n. n. for *P. faba*, Leidy nec H. v. Mey. HAY, Amer. Natural. xxxiii, p. 788.

√ *Polypsephis*, n. n. for *Microdon*, Ag. nec Meigen. HAY, l. c.

Lepidotus patagonicus, sp. n. (foss.), AMEGHINO, Sin. geol.-pal., Suppl. p. 10, Cretaceous of Patagonia.

√ *Paraikichthys*, g. n., near *Lepidotus*, for *P. ornatissimus*, sp. n. (foss.), AMEGHINO, l. c., Cretaceous of Patagonia.

Scaphirhynchus, Heck. Remarks on the Asiatic species: WESTBERG, KB. Ver. Riga xlii, p. 159.

Gyrosteus mirabilis, Ag. (foss.). Various remains described and figured by A. S. WOODWARD, Tr. Yorksh. geol. Soc. (2) xiii, p. 461, pls. lxviii & lxix.

Acrolepis hopkinsi, McCoy (foss.). Remains figured by WELLBURN, P. Yorksh. geol. Soc. (2) xiii, pl. lx, figg. 1–3.

Elonichthys binneyi, Traq. (foss.). Specimen described and figured by WELLBURN, P. Yorksh. geol. Soc. (2) xiii, p. 427, pl. lxii, fig. 1; *E. scheidi*, sp. n. (foss.), GERHARDT, Berr. Oberrhein. geol. Ver. xxxii, p. 16, figg., Carboniferous of Lenzkirch, Black Forest.

Benedenius deneensis, Traq. (foss.). On new specimens: BOULENGER, Ann. Nat. Hist. (7) iv, p. 445, pls. ix & x.

CROSSOPTERYGII.

Polypterus bichir, Geoffr. On the life habits: N. R. HARRINGTON, Amer. Natural. xxxiii, p. 721. On the respiratory organs: id. Science (2) ix, pp. 314 & 315; *P. congicus*, Blgr. Young with external gills noticed by BOULENGER, P. Z. S. 1899, p. 554, and figured, Ann. Mus. Congo, Zool. i, pl. xxx, fig. 1; *P. delhezi*, sp. n., id. ibid. p. 61, pl. xxx, fig. 2, Congo; *P. retropinnis*, sp. n., VAILLANT, Bull. Mus. Paris 1899, p. 219, Congo [= *P. palmas*, Ayres.—REC.].

DIPNOI.

R. SEMON, Zool. Anz. xxii, pp. 294–300, fig., has observations on the Dipnoan fins, with special reference to the modes of locomotion in *Ceratodus forsteri*. Remarks by L. KATHARINER, t. c. p. 345.

R. SEMON, Festschrift C. v. Kupffer, pp. 353–364, figg., remarks on the articulations in the limbs of *Ceratodus*, and SB. Ges. Munchen xv, pp. 75–85, figg., on the development of the teeth.

J. G. KERR, Zool. Anz. xxii, pp. 292–294, and P. R. Soc. London, pp. 160 & 161, gives an abstract of a paper on the external features in the development of *Lepidosiren paradoxa*.

Lepidosiren paradoxa, Fitz. Further notes on Amazonian specimens: GOELDI, P. Z. S. 1898, p. 852, figg.

Ceratodus iheringi, sp. n. (foss.), AMEGHINO, Sin. geol.-pal., Suppl. p. 10, Cretaceous of Patagonia.

√ *Redfieldius*, n. n. for *Catopterus*, Redfield nec Ag., HAY, Amer. Natural. xxxiii, p. 789.

Sagenodus textilis, n. n. for *S. gurleianus*, Cope, 1897, nec Cope, 1877. HAY, Amer. Natural. xxxiii, p. 786.

Dipterus, Sedg. & Murch. (foss.). On a tooth from the Middle Devonian of Iowa: J. A. UDDEN, J. Geol. vii, p. 494, fig.; *D. valenciennesi*, S. & M. On a specimen from the Devonian of Mühlheim on the Rhine: JAEKEL, Zeitschr. Deutsch. geol. Ges. li, Protok. p. 37; *D. contraversus*, n. n. for *D. radiatus*, Newberry nec Eichw. HAY, l. c.

OSTRACODERMI.

Considerations on the relationships and classification of this Subclass: TRAQUAIR, Tr. R. Soc. Edinb. xxxix, p. 843.

Pteraspis cornubica, McCoy. On some new specimens: A. S. WOODWARD, Tr. geol. Soc. Cornwall xii, p. 229.

Thelodus scoticus and *planus*, spp. nn., TRAQUAIR, t. c. pp. 829 & 831, pls. 1, figg. 1–10 & ii, figg. 1–3, Silurian, S. Scotland.

Lanarkia, g. n., allied to *Thelodus*, TRAQUAIR, t. c. p. 832; *L. horrida*, *spinosa*, and *spinulosa*, spp. nn., id. ibid. pp. 832 & 833, pls. iii & iv, Silurian, S. Scotland.

Ateleaspis, g. n., type of a new family (*Ateleaspidæ*) of *Osteostraci*, for *A. tessellata*, sp. n., TRAQUAIR, t. c. p. 834, pl. iv, figg. 6–12, Silurian, S. Scotland.

Anaspida. A new Order, provisionally referred to the Ostracoderms, for the new family *Birkeniidæ*, TRAQUAIR, t. c. p. 837.

Birkenia, g. n., for *B. elegans*, sp. n., TRAQUAIR, t. c. p. 837, pl. v, figg. 1–4, Silurian, S. Scotland.

Lasanius, g. n., allied to the preceding. TRAQUAIR, t. c. p. 840; *L. problematicus*, and *armatus*, spp. nn., id. ibid. pp. 841 & 842, pl. v, figg. 5–13, Silurian, S. Scotland.

HOLOCEPHALA.

H. C. REDEKE, Tijdschr. Nederland. Dierk. Ver. (2) vi, pp. 119–127, pl. iv, writes on the kidneys of the Holocephali.

B. SOLGER, Morphol. Jahrb. xxvii, pp. 322–324, figg., recognises the presence of Mauthner's fibres in the spinal cord of *Chimæra*.

Chimæra monstrosa, L. On the egg: GRIEG, Bergens Mus. Aarbog 1898, No. 3, p. 15, figg.

ELASMOBRANCHII.

O. JAEKEL, Verh. Deutsch. zool. Ges. 1899, pp. 249–258, figg., and Zeitschr. Deutsch. geol. Ges. li, Protok. pp. 56–60, figg., discusses the condition of the jaws and pectoral arch in *Acanthodes bronni*, which he regards as proving the origin of both from visceral arches.

W. G. RIDEWOOD, Anat. Anz. xv, pp. 346–348, figg., remarks on the basibranchial skeleton of *Echinorhinus spinosus*.

H. F. E. JUNGERSEN, Danish Ingolf-Expedition ii, pt. 2 (88 pp., figg., 6 pls.), writes on the claspers or copulatory organs of Selachians.

H. C. REDEKE, Tijdschr. Nederland. Dierk. Ver. (2), vi, pp. 127–135, pl. v, remarks on anomalous genital organs and egg-capsules in Skates.

A. N. SEWERTZOFF, Festschrift C. v. Kupffer, pp. 281–320, figg., pls. xxix–xxxi, investigates the development of the skull in *Acanthias* and *Pristiurus*.

J. RÜCKERT, Festschrift C. v. Kupffer, pp. 581–704, figg., pls. lii–lix, has a memoir on the early stages in the development of Elasmobranchs.

A. N. SEWERTZOFF, Bull. Soc. Moscou (2) xii, pp. 393–445, pls. i–iv, continues his contribution to Selachian embryology, dealing with the metamery of the head of *Torpedo*.

C. K. HOFFMANN, Morphol. Jahrb. xxvii, pp. 325–414, figg., pls. xiv–xviii, continues his embryological investigations on Selachians, dealing with the dorsal nerve-roots of the head-somite.

H. BRAUS, Morphol. Jahrb. xxvii, pp. 415–496, 501–628, figg., pls. xix–xxv, deals with the development of the musculature and peripheral nervous system in Selachians.

A. KOHN, Arch. mikr. Anat. liii, pp. 281–311, pl. xv, writes on the suprarenal and interrenal bodies of Selachians.

J. MAYR, Anat. Hefte I, viii, 1897, pp. 75–151, figg., pls. xi–xviii, investigates the development of the pancreas in Selachians.

E. P. ALLIS, Anat. Anz. xvi, pp. 605–607, fig., remarks on an abnormal Musculus obliquus superior in *Carcharias*.

B. RAWITZ, Arch. mikr. Anat. liv, pp. 481–513, pl. xxvi, writes on the blood-corpuscles of *Scyllium catulus*.

A. SCHAPER, Festschrift C. v. Kupffer, pp. 1–10, pls. i–iii, writes on the nervous elements of the retina in Selachians.

G. FORSSELL, Zeitschr. wiss. Zool. lxv, pp. 725–744, pl. xxxiv, has a contribution to our knowledge of the anatomy of the Lorenzinian ampullæ in the skin of *Acanthias vulgaris*.

L. JOHANN, op. cit. lxvi, pp. 136–160, figg., pls. x & xi, writes on peculiar epithelial structures (luminous organs) in *Spinax niger*.

A. ROMANO, Monit. Zool. ital. x, Suppl. pp. iii–xxiii, pls. vi & vii, writes on the electric nervous centres of Selachians.

A. S. WOODWARD, P. Geol. Ass. xvi, pp. 1–14, pl. i, has notes on Selachian teeth from English Eocene formation.

A. BETHE, Arch. ges. Physiol. lxxvi, pp. 471–496, figg., has remarks on the locomotion of the dog-fish of the genus *Scyllium*.

Carcharias acutus, Rüpp., pl. iv, figg. i & v, fig. 1, *melanopterus*, Q. & G., pl. iv, fig. 2, *tæniatus*, H. & E., pl. iv, fig. 3, *acutidens*, pl. v, fig. 2, *menissorah*, M. & H., pl. vii, fig. 1, and *ehrenbergi*, Klunz., pl. vii, fig. 2, figured in HEMPRICH & EHRENBERG'S Symbolæ physicæ; *C.* (*Aprionodon*) *frequens*, Dames (foss.). Remarks by WITTICH, Notizbl. Ver. Erdk. Darmstadt (4) xix, 1898, p. 34.

Galeocerdo tigrinus, M. & H., figured in HEMPRICH & EHRENBERG, op. cit. pl. v, fig. 3; *G. medius*, sp. n. (foss.), WITTICH, t. c. p. 39, pl. i, fig. 4, Middle Oligocene, Mayence Basin.

Hemipristis, sp. (foss.). On a tooth from the Middle Oligocene of the Mayence Basin: WITTICH, op. cit. xviii, 1897, p. 47, pl. v, fig. 4.

Sphyrna zygæna, L. (*Zygæna erythræa*, H. & E.), figured in HEMPRICH & EHRENBERG'S Symbolæ physicæ, pl. vi, fig. 2.

Mustelus lævis, Risso (*M. mosis*, H. & E.) figured in HEMPRICH & EHRENBERG, op. cit. pl. vii, fig. 3; *M. dorsalis*, Gill. Notes by J. F. ABBOTT, P. Ac. Philad. 1899, p. 327.

Lamna nodosa, sp. n. (foss.), AMEGHINO, Sin. geol.-pal., Suppl., p. 11, Cretaceous of Patagonia.

Oxyrhina leptodon, Ag. (foss.). Remarks by WITTICH, t. c. p. 36.

Carcharodon disauris, Ag. (foss.). On remains from the Eocene sands near Brussels: DELHEID, Bull. Soc. malac. Belgique 1899, p. lxxiii.

Odontaspis taurus, M. & H., figured, in HEMPRICH & EHRENBERG, op. cit. pl. vi, fig. 1; *O. abbatei*, sp. n. (foss.), PRIEM, Bull. Soc. geol. France (3) xxvii, p. 246, pl. ii, fig. 26, Eocene of the Mokattam hills, Egypt.

Notidanus atrox, sp. n. (foss.), AMEGHINO, Sin. geol.-pal., Suppl., p. 11, Cretaceous of Patagonia.

Chlamydoselachus anguineus, Garm. Further notes by GARMAN, Mem. Mus. Harvard xxiv, p. 41.

Scyllium quagga, sp. n., ALCOCK, Descr. Cat. Deep-Sea Fishes Ind. Mus. p. 17, off Malabar Coast, 102 faths.

Gynglimostoma muelleri, Gthr. (*Scymnus porosus*, H. & E.) figured in HEMPRICH & EHRENBERG's Symbolæ physicæ, pl. vi, fig. 3.

Hybodus copei, n. n. for *H. regularis*, Cope nec Reuss. HAY, Amer. Natural. xxxiii, p. 784.

Hybocladodus, n. n. for *Helodus compressus*, Newberry & Worthen, HAY, t. c.

Platyxystrodus, n. n. for *Xystrodus*, Morris & Roberts nec Plieninger. HAY, Amer. Natural. xxxiii, p. 785.

Centroscyllium nigrum, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 28, pl. i, fig. 2, off Galapagos Ids., 546–555 faths.

Isistius brasiliensis, Q. & G., redescribed and figured by GARMAN, Mem. Mus. Harvard xxiv, p. 34, pl. i, fig. 1.

Squalus acanthias, L. On the egg and embryo: GRIEG, Bergens Mus. Aarbog 1898, No. 3, p. 20, figg.

Centrophorus squamosus, Gm. On a specimen from Iceland: A. S. JENSEN, Vid. Medd. 1899, p. 411, pl. iii.

Euprotomicrus labordii, Q. & G. Notes on the external characters and visceral anatomy: R. O. CUNNINGHAM, P. Z. S. 1899, p. 732.

Squatina alata, Probst (foss.). Teeth described and figured by WITTICH, Notizbl. Ver. Erdk. Darmstadt (4) xviii, 1897, p. 46, pl. v, figg. 5 & 6.

Discopyge tschudii, Heck. Note by J. F. ABBOTT, P. Ac. Philad. 1899, p. 329.

Raia oxyrhynchus, L., *batis*, L., and *nidarosiensis*, Coll. Notes by GRIEG, Bergens Mus. Aarbog 1898, No. 3, pp. 17 & 19; *R. johannis-davisi*, sp. n., ALCOCK, Descr. Cat. Deep-Sea Fishes Ind. Mus. p. 21, off Travancore Coast, 224–284 faths.; *R. badia*, sp. n., GARMAN, Mem. Mus. Harvard xxiv, p. 22, pl. vi, figg. 1 & 2, Gulf of Panama, 465–1270 faths.; *R. borea*, n. n. for *R. hyperborea*, Gthr. nec Collett; id. ibid. p. 24.

Dasyatis thetidis, sp. n., WAITE, Mem. Austral. Mus. iv, p. 46, New South Wales.

Myliobatis leidyi, n. n. for *M. serratus*, Leidy nec H. v. Mey. HAY, Amer. Natural. xxxiii, p. 785.

Aëtobatis curviserratus, sp. n. (foss.), AMEGHINO, Sin. geol.-pal., Suppl. p. 11, Cretaceous of Patagonia.

Dicerobatis (?). On a very large specimen from Durban: A. D. MILLAR, Zool. (4) iii, p. 145, pl. i.

Ceratoptera ehrenbergii, M. & H. (*C. stelligera*, H. & E.) figured in HEMPRICH & EHRENBERG's Symbolæ physicæ, Zool. pl. ii, and Zoot. pl. x.

Cladodus neilsoni, Traq. (foss.), described and figured by TRAQUAIR, Tr. geol. Soc. Glasgow xi, 1897, p. 41, pl. iv. *C. coniger*, n. n. for *C. carinatus*, Newberry nec St John & Worthen, and *C. claypolei*, n. n. for *C. magnificus*, Claypole nec Tuomey. HAY, Amer. Natural. xxxiii, p. 783.

Diplodus priscus and *striatus*, spp. nn. (foss.), EASTMAN, J. Geol. vii, p. 490, pl. vii, figg. 1–4, Devonian of Illinois.

Phœbodus politus, Newberry (foss.). Tooth figured by EASTMAN, t. c. pl. vii, fig. 5.

Acanthodes wardi, Egert. (foss.). Remains figured by WELLBURN, P. Yorksh. geol. Soc. (2) xiii, pl. lx, figg. 4 & 5.

Stemmatias, n. n. for *Stemmatodus*, St John & Worthen, nec Heckel. HAY, Amer. Natural. xxxiii, p. 784.

CYCLOSTOMI.

W. H. GASKELL, J. Anat. Physiol. norm. path. (2) xiii, pp. 638–670, pl. xlv, continues his study of the structure of *Ammocœtes* with special reference to the origin of Vertebrates.

B. DEAN, Festschrift C. v. Kupffer, pp. 221–276, figg., pls. xv–xxvi, gives a general account of Myxinoid development from the egg and segmentation to hatching, based on *Bdellostoma stouti*. Also Science (2) ix, p. 311.

F. DOFLEIN, Verh. Deutsch. zool. Ges. 1899, pp. 21–30, writes on the development of *Bdellostoma stouti*.

C. v. KUPFFER, SB. Ges. Munchen xv, pp. 21–35, figg., remarks on the development of the head of *Bdellostoma*.

F. DOFLEIN, Festschrift C. v. Kupffer, pp. 339–352, figg., pls. xxxiii–xxxv, writes on the formation of the ova and the oviposition in *Bdellostoma*.

N. K. KOLTZOFF, Anat. Anz. xvi, pp. 510–523, figg., has a preliminary communication on the metamery of the head in *Petromyzon planeri*.

K. HERFORT, Anat. Anz. xvi, pp. 369–376, figg., has observations on the segmentation of the egg of *Petromyzon fluviatilis*.

M. W. WHEELER, Zool. Jahrb. Anat. xiii, pp. 1–88, pls. i–vii, describes the development of the urinogenital organs of the Lamprey.

O. MAAS, Festschrift C. v. Kupffer, pp. 197–220, pls. xii–xiv, writes on the structure of the intestinal canal in *Myxine glutinosa*.

K. E. SCHREINER, Bergens Mus. Aarbog 1898, No. 1, writes on the histology of the intestinal tract of *Myxine glutinosa*.

A. SCHAPER, Anat. Anz. xvi, pp. 439–446, figg., has remarks on the histology of the brain of *Petromyzon*.

E. GIGLIO-TOS, Anat. Anz. xv, pp. 298–300, has further remarks on the blood-corpuscles of the Lampreys.

M. ASCOLI, Arch. mikr. Anat. liii, pp. 623–631, pl. xxix, writes on the origin of the blood-corpuscles of *Petromyzon*.

MISS R. ALCOCK, J. Anat. Physiol. norm. path. (2) xiii, pp. 612–637, has a paper on digestion in *Ammocœtes*.

Petromyzon planeri, Bl. On a larva with trifid tail: BARFURTH, Arch. Entwickmech. ix, p. 27, figg., pl. iii; *P. wilderi*, Gage. On the habits: GAGE, P. Amer. Ass. xlviii, p. 256.

Exomegas macrostomus, Burm. Note by BERG, Comun. Mus. Buenos Aires i, p. 91.

Macrophthalmia chilensis, Gray. Remarks by B. DEAN, Science (2) ix, p. 740.

Myxine australis, Jen., p. 345, pl. lxviii, fig. 8, *limosa*, Gir., p. 346, pl. lxviii, fig. 7, and *glutinosa*, p. 348, pl. lxviii, fig. 5, redescribed and figured by GARMAN, Mem. Mus. Harvard xxiv; *M. circifrons*, p. 344, pl. lxviii, figg. 1–4, Gulf of Panama, 730 faths., *tridentiger*, p. 345, S. coasts of S. America, and *acutifrons*, p. 347, pl. lxviii, fig. 6, Straits of Magellan, spp. nn., id. ibid.

LEPTOCARDII.

Pp. 2137–2170 of E. PERRIER's 'Traité de Zoologie' deal with the *Acrania*.

J. F. HEYMANS & O. VAN DER STRICHT, Mem. Cour. Ac. Belgique (4to) lvi, 1898, No. 3 (74 pp., 13 pls.), have a memoir on the nervous system of the Amphioxus.

G. SCHNEIDER, Anat. Anz. xvi, pp. 601–605, figg., writes on resorption and excretion in *Branchiostoma lanceolatum*.

VI. TUNICATA.

BY

PROFESSOR W. A. HERDMAN, D.Sc., F.R.S.

CONTENTS.

INTRODUCTION.

WE have again this year an important text-book account of the group, of an advanced and detailed nature, from E. PERRIER. LOHMANN gives us a useful account of the structure and functions of the cuticular formation known as the "House" in Appendicularians; and we owe good anatomical contributions to our knowledge to HUNTER, METCALF, BANCROFT and others. Our knowledge of the species of Tunicata and of their geographical distribution has been widely extended during the year by the systematic work of LOHMANN, RITTER, HARTMEYER, PIZON, and HERDMAN.

I. TITLES.

1. BANCROFT, F. W. Ovogenesis in *Distaplia occidentalis*, Ritter (MS.), with remarks on other species. Bull. Mus. Comp. Zool. xxxv (4), pp. 59–112, pls. 1–6.

2. ——. A new function of the vascular ampullæ in the Botryllidæ. Zool. Anz. No. 601, pp. 450–462.

3. CRAMPTON, H. E., Junr. Origin of yolk in egg of *Molgula*. Science for March 3, 1899, p. 317.

4. DAMAS, D. Les formations épicardiques chez *Ciona intestinalis*. Arch. Biol. xvi, pp. 1–25, pls. i–iii.

5. GASKELL, W. H. On the origin of Vertebrates deduced from the study of *Ammocœtes*. J. Anat. Physiol. xxxiii, pp. 638–671, pl. xlv.

6. GOLSKI, ST. Reifung und Befruchtung des Eies von *Ciona intestinalis*. Anz. Ak. Wiss. Krakau, pp. 124–130; and Zool. Centrlbl. vi, p. 945.

7. HARTMEYER, R. Brutpflege bei arktischen Monascidien. Zool. Anz. No. 590, pp. 268–270.

8. ——. Die Monascidien der Bremer Expedition nach Ost-Spitzbergen im Jahre 1889. Zool. Jahrb. Syst. xii, pp. 453–520, pls. 22, 23.

9. HERDMAN, W. A. Descriptive Catalogue of the Tunicata in the Australian Museum, Sydney, N.S.W.; pp. xviii+139, with 45 plates. Austr. Mus. Sydney, Catalogue No. xvii, Liverpool, 1899.

10. ——. "Ascidia," L.M.B.C. Memoir No. I, pp. vi+52, 5 pls. Liverpool Marine Biology Committee, Liverpool, October, 1899.

11. HUNTER, G. W. Notes on the peripheral nervous system of *Molgula manhattensis*. J. Compar. Neurology viii, pp. 202–206.

12. KOROTNEFF, A. Zur Embryologie von *Salpa maxima-africana*. Zeitschr. Wiss. Zool. lxvi, pp. 625–636, pls. 38–40.

13. LOEB, J. Einleitung in die vergl. Gehirn-physiol. und vergl. Psychologie. Leipzig, 1899.

14. LOHMANN, H. Untersuchungen über den Auftrieb der Strasse von Messina mit besonderer Berüchsichtigung der Appendicularien und Challengerien. Sitz. k. Pr. Ak. Wiss. Berlin 1899, No. xx, pp. 384–400.

15. ——. Das Gehäuse der Appendicularien nach seiner Bildungsweise, seinem Bau und seiner Function. Zool. Anz. xxii, No. 587, pp. 206–214, 4 figg.

16. ——. Das Gehäuse der Appendicularien, sein Bau, seine Funktion und seine Entstehung. Schr. Ver. Schleswig-Holst. xi, Heft 2, pp. 347–407, pls. i–iv.

17. METCALF, M. M. An answer to a suggestion by Delage and Hérouard that the accessory eyes in Salpidæ may be otocysts. Anat. Anz. xvi, No. 12, pp. 301 & 302.

18. ——. Some relations between nervous tissue and glandular tissue in the Tunicata. Biol. Bull. i, No. 1, pp. 1–6, with figg.

19. PERRIER, E. Traité de Zoologie. Fasc. v. Amphioxus—Tuniciers. Paris, 1899.

20. PIZON, A. Études biologiques sur les Tuniciers Coloniaux fixés. Bull. Soc. Ouest France ix, pp. 1–55, 16 pls.

21. ——. Description d'un nouveau genre d'Ascidie Simple des Côtes de France (*Polycarpoides sabulosum*). Bull. Mus. Paris 1898, No. 7, pp. 326 & 327.

22. ——. Description d'un nouveau genre d'Ascidie Simple de la famille des Molgulidées, *Meristocarpus*. T. c. No. 1, pp. 42 & 43.

23. ——. Sur la coloration des Tuniciers et la mobilité de leurs granules pigmentaires. C.R. Ac. Sci. cxxix, pp. 395–398.

24. RITTER, W. E. Contribution to the knowledge of the Tunicates of the Pribilof Islands. Extracted from Jordan's "The Fur Seals and Fur-Seal Islands of the North Pacific Ocean," pt. III, pp. 511–537, pl. lxxxvi. Treasury Department document 2017. Washington, 1899.

25. SCHULTZE, L. S. Die Regeneration des Ganglions von *Ciona intestinalis*, und über das Verhältnis der Regeneration und Knospung zur Keimblätterlehre, 86 pp. & 2 pls. Habilit.-Schr. Jena, 1899; and Jena. Zeitschr. xxxiii, pp. 263–344, 2 pls.

26. SEELIGER, O. Ueber Segmentation und Verwandtschaftsbeziehungen der Appendicularien. Sitzb. naturf. Gesellsch. Rostock (Anh. z. Arch. d. Ver. d. Freunde d. Naturg. Mecklenb.) 1899, No. 3, pp. 2–10.

27. SELYS LONGCHAMPS, M. DE. Étude de la Branchie chez *Ascidiella scabroides*. Arch. Biol. xvi, pp. 117–171, pls. viii–x.

28. SLUITER, C. PH. Berichtigung über eine *Synstyela*-Art. Zool. Anz. No. 608, p. 110.

29. WILLEY, A. Remarks on some recent work on the Protochordata, &c. Quart. J. Micr. Sci., No. 166, pp. 223–244.

II. SUBJECT-INDEX.

A. ANATOMY.

DAMAS comes to much the same conclusions as Newstead (1893) in regard to the epicardial formations in *Ciona*, and shows that the so-called perivisceral cavity opens into the branchial sac, and corresponds to the epicardium of *Clavelina*.

SELYS LONGCHAMPS has studied the detailed arrangement of the stigmata in the branchial sac of *Ascidiella scabroides*, and their development from the six primary protostigmata. He finds that every new stigma is a part separated from a pre-existing stigma. The dorsal lamina in this species commences as a series of languets which are later on united by a continuous membrane. He shows the changes the branchial sac goes through in becoming adult by the formation of new ranges of stigmata, and transverse vessels of different orders, and argues that care should be taken to employ only the fully formed branchial sac in characterising species.

LOHMANN has shown that the cuticular house of the Appendicularians is a complicated apparatus of passages with partial septa, forming in places a finely perforated network, all produced as a secretion from certain large ectoderm cells, the oikoplasts, on the anterior part of the body (see also under Physiology).

SEELIGER discusses the structure of the tail of *Appendicularia* in relation to segmentation.

HUNTER has found in *Molgula manhattensis* and in *Cynthia partita* that the endostyle contains many sensory bipolar cells. They are situated amongst the fusiform ciliated cells on the lateral wall of the groove. He has also found nerve endings in some of the ciliated cells of the peri-pharyngeal bands and of the branchial sac. The sensory nature of the tentacles has been demonstrated, and that of the dorsal tubercle (stated previously by various authors) has been confirmed. Muscle endings have been found in the body musculature and sensory papillæ in the ectoderm.

HARTMEYER finds in two species (1 new) of the genus *Dendrodoa* from East Spitzbergen the presence of a more or less well-developed brood-pouch as a membranous sack given off from the peribranchial cavity, and containing tailed larvæ.

PIZON finds the colouration of Compound Ascidians due to very minute pigment granules which lie in vesicles and show a rapid movement.

PERRIER in his textbook has reached *Amphioxus* and the Tunicata, and gives an interesting account of the latter group, rather detailed in some sections, such as that on budding, and illustrated by many figures.

HERDMAN, in the introduction to his Catalogue of Australian Tunicata, gives an account of the structure of a typical Ascidian; and other anatomical descriptions are scattered through the work. The L. M. B. C. memoir on *Ascidia* by the same author contains a detailed account of the anatomy and histology of that type.

B. PHYSIOLOGY.

LOEB, in connection with the comparative physiology of the nervous system, has a chapter on the ganglion in *Ciona*, and its reflex actions.

METCALF has shown that the so-called otocysts of *Salpa* are really glandular organs very possibly related to the neural gland of Ascidians. The two pairs of small eyes in the ganglion of *Salpa* which Delage and Hérouard suggest may be otocysts are according to Metcalf, who described them, exactly similar in structure to the larger eye, and cannot be of an otocystic nature.

LOHMANN has given us a very complete account of the structure and functions of the cuticular "House" of the Appendicularians. It is formed by special ectoderm cells called "oikoplasts" and can be completed in 3 or 4 hours, and then may be cast off and replaced by another a few hours later. He considers that the "house" serves several functions. It is a fishing apparatus or trap for straining the water and entangling microscopic food particles. It helps in locomotion by its hydrostatic effect; and it is also a protection to the animal, which may escape from enemies by throwing off the house.

SCHULTZE finds that when an Ascidian is anæsthetised and the ganglion removed it becomes regenerated from the lining of the peribranchial cavity, a layer which like the ganglion is epiblastic in origin.

BANCROFT shows that the ampullæ on the ectodermal vessels round the margins of the colony in Botryllidæ in addition to acting as storage reservoirs for blood, organs for the secretion of test matrix, and for respiration, are also organs for blood propulsion. He found no trace of a reproductive function. The ampullæ execute co-ordinated pulsations, the co-ordination being due to variations in the blood pressure. The ampullæ can keep up the circulation for some time independently of the hearts of the zooids.

C. EMBRYOLOGY.

METCALF shows that in different species of Ascidians the ganglionated dorsal nerve cord of the embryo may arise from the cellular cortex of the brain, from the neural gland, or from a mass of cells formed by the fusion of brain and gland. He shows that there is a peculiarly intimate relation between glandular tissue and nervous tissue in the Tunicata hardly to be paralleled elsewhere in the animal kingdom.

GASKELL in his studies on the origin of Vertebrates, considers that the thyroid gland of *Ammocœtes* has given rise on the one hand to the endostyle of *Amphioxus* and the Tunicata, and on the other to the thyroid of *Petromyzon* and the rest of the Vertebrata. Occasional other references to the structure of *Amphioxus* and the Tunicata occur in the paper.

CRAMPTON describes the stages in the formation of yolk in the egg of *Molgula*. At first there are no yolk granules. Then a small albumenous granular body is formed just outside the nucleus. This grows larger during the "period of formation of the yolk mass." The next period is the "disintegration of the yolk mass"—the granules being spread through the vacuolated cell body. In the third period the products of disintegration enlarge to form the definite deutoplasm spheres.

BANCROFT deals with the development of the sexual organs in *Distaplia occidentalis* and their structure in the adult in various species. His subjects are:—the incubatory pouch, the envelopes of the ovum, the test-cells—their origin and fate, the other follicular cells, the structure of the ovum and its maturation. He considers that the "test-cells" are derived from follicle cells, and that they take no part in the formation of the test.

KOROTNEFF finds in *Salpa maxima-africana* that the polar body is of exceptionally large size, equivalent to the ovum itself. Segmentation results in macromeres and micromeres, which however is only a temporary distinction.

GOLSKI gives some information in regard to the maturation and fertilization of *Ciona intestinalis*. The first polar body apparently often subdivides to form two.

PIZON has followed day by day the changes in a young colony of *Botrylloides rubrum*, and traces the rise of the successive generations of buds and the degeneration of their parents. He also makes observations upon the effect of light, the beating of the heart and colonial circulation, and the duration of life in the members of the colony.

D. GEOGRAPHICAL DISTRIBUTION.

LOHMANN finds 26 species of Appendicularida in the Straits of Messina, of which 3 are new to science.

HARTMEYER records 11 species of simple Ascidians from the Bremer Expedition to the East of Spitzbergen (1889). Of these 2 are new species and several others are new records to the fauna of Spitzbergen.

RITTER describes 12 species of Tunicata from the Pribilof Islands of which 11 are new to science—3 simple and 8 compound Ascidians.

HERDMAN has recorded from the Australian seas 183 species of Tunicata, while only about 176 species are known from the shores of North Western Europe. Sixty-three of these Australian species are described and figured for the first time in the author's "Catalogue."

III. SYSTEMATIC.

LARVACEA.

Oikopleura mediterranea, n. sp., LOHMANN, p. 398.
Fritillaria charybdæ, n. sp., LOHMANN, p. 399.
F. messanensis, n. sp., LOHMANN, p. 399.
Kowalevskia oceanica, n. sp., LOHMANN, p. 399.

ASCIDIÆ SIMPLICES.

MOLGULIDÆ.

Meristocarpus, n. gen., PIZON, differs from other *Molgulidæ* in the separation of male from female part of gonad.
M. fuscus, n. sp., PIZON, p. 43.
Ascopera nana, n. sp., HERDMAN, p. 57.
Molgula mollis, n. sp., HERDMAN, p. 54.
M. sydneyensis, n. sp., HERDMAN, p. 55.
M. recumbens, n. sp., HERDMAN, p. 56.

CYNTHIIDÆ.

Styela pinguis, n. sp., HERDMAN, p. 37.
S. etheridgii, n. sp., HERDMAN, p. 38.
S. whiteleggii, n. sp., HERDMAN, p. 40.
S. personata, n. sp., HERDMAN, p. 41.
S. stolonifera, n. sp., HERDMAN, p. 42.
S. greeleyi, n. sp., RITTER, p. 516.
Polycarpa fungiformis, n. sp., HERDMAN, p. 43.
P. stephenensis, n. sp., HERDMAN, p. 45.
P. sluiteri, n. sp., HERDMAN, p. 46.
P. sacciformis, n. sp., HERDMAN, p. 48.
P. jacksoniana, n. sp., HERDMAN, p. 50.
P. attollens, n. sp., HERDMAN, p. 53.
Polycarpoides, n. gen., PIZON, characterised by hermaphrodite condition of polycarps. This limits the 2 former genera *Styela* and *Polycarpa* in a new manner.
P. sabulosum, n. sp., PIZON, p. 326.
Dendrodoa kükenthali, n. sp., HARTMEYER, p. 493.
D. tuberculata, n. sp., RITTER, p. 512.
D. subpedunculata, n. sp., RITTER, p. 514.
Cynthia arctica, n. sp., HARTMEYER, p. 466 (this is merely a re-naming of Traustedt's *C. echinata*).
C. molguloides, n. sp., HERDMAN, p. 27.
C. solanoides, n. sp., HERDMAN, p. 29.
C. multiradicata, n. sp., HERDMAN, p. 30.
C. cataphracta, n. sp., HERDMAN, p. 31.
C. spinifera, n. sp., HERDMAN, p. 32.
C. crinitistellata, n. sp., HERDMAN, p. 34.
Microcosmus australis, n. sp., HERDMAN, p. 23.
M. ramsayi, n. sp., HERDMAN, p. 25.

ASCIDIIDÆ.

Ciona longissima, n. sp., HARTMEYER, p. 502.
Ascidia incerta, n. sp., HERDMAN, p. 11.
A. phallusioides, n. sp., HERDMAN, p. 12.

ASCIDIIDÆ COMPOSITÆ.

DISTOMIDÆ.

Colella tenuicaulis, n. sp., HERDMAN, p. 64.
C. cyanea, n. sp., HERDMAN, p. 69.

POLYCLINIDÆ.

Amaroucium rotundatum, n. sp., HERDMAN, p. 71.
A. protectans, n. sp., HERDMAN, p. 73.
A. distomoides, n. sp., HERDMAN, p. 75.
A. anomalum, n. sp., HERDMAN, p. 76.
A. kincaidi, n. sp., RITTER, p. 524.
A. pribilovense, n. sp., RITTER, p. 525.
A. snodgrassi, n. sp., RITTER, p. 527.
A. dubium, n. sp., RITTER, p. 528.
Synoicum irregulare, n. sp., RITTER, p. 530.
Polyclinum clava, n. sp., HERDMAN, p. 77.
P. giganteum, n. sp., HERDMAN, p. 79.
P. globosum, n. sp., HERDMAN, p. 80.
P. complanatum, n. sp., HERDMAN, p. 81.
P. fuscum, n. sp., HERDMAN, p. 82.
P. prunum, n. sp., HERDMAN, p. 83.
P. nigrum, n. sp., HERDMAN, p. 84.
Polyclinum globosum, n. sp., RITTER, p. 518.
P. pannosum, n. sp., RITTER, p. 519.
Aplidiopsis jordani, n. sp., RITTER, p. 521.

DIDEMNIDÆ.

Leptoclinum incanum, n. sp., HERDMAN, p. 90.
L. fimbriatum, n. sp., HERDMAN, p. 91.
L. patulum, n. sp., HERDMAN, p. 92.

BOTRYLLIDÆ.

Botrylloides leptum, n. sp., HERDMAN, p. 101.

POLYSTYELIDÆ.

Synstyela michaelseni, n. sp., SLUITER, p. 110.

VII. MOLLUSCA.

BY

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Assisted by E. A. SMITH, F.Z.S., and G. C. CRICK, F.G.S.

CONTENTS.

INTRODUCTION.

THE most salient feature of the literature of the year 1899, bearing on the Mollusca, appears to be a general increase in the number of papers dealing with every branch.

Amongst the works relating to the general subject special attention may be directed to the new part of COSSMANN'S (92) 'Essais de Paléoconchologie,' in which he deals with portions of the Toxoglossa and Rachiglossa; though written from the palcontologist's point of view, it is of considerable importance to students of the recent Mollusca. In a similar category may be placed the American edition of ZITTEL'S (595) well-known

work, though the wisdom of proposing many new genera in a 'Text-book' of this nature may be questioned. It may be mentioned that some portions dealing with the Mollusca appear to have been distributed in past years, that relating to the *Cephalopoda*, however, in which all but one of the new genera lie, is dated 1900. A further instalment of BRONN's (57) important work, now written by SIMROTH, has been published. PILSBRY in TRYON'S Manual (551) has continued his careful study of the *Bulimulidæ*; it is to be regretted that the projected third series of this work, to deal with the *Pelecypoda*, appears to have been abandoned. Steady progress has been made with the Conchylien-Cabinet (296), nine parts having been issued, dealing with both land and marine *Gastropoda*. Considerable attention has been given to the study of the hinge in the *Pelecypoda*, with a view to their classification; notably by NOETLING (356, 357) and VEST (569, 570). HEDLEY (205) has published a very interesting zoo-geographic scheme for the Mid-Pacific Islands.

Turning to works of a faunistic nature and, firstly, dealing with non-marine molluscs, we have, as before, to chronicle progress by MARTENS (288) in his study of the Central-American fauna, and by MOELLENDORFF (319) in his supplement to Semper's well-known 'Reisen.' The brothers SARASIN (456) have issued a work on the land fauna of Celebes, valuable from a malacological as well as a conchological standpoint. GODWIN-AUSTEN (171) has continued his study of the fauna of the Indian region; while STURANY (521) has written a valuable account of the South African land and freshwater shells. LOCARD (269) has described the fauna of Portugal, though we venture to think that some of his supposed new species may prove to be only varieties of forms already known. To VENDRYES (568) we owe a useful catalogue of the Jamaican non-marine molluscs: TAYLOR (542) has published a further part of his study of the land and freshwater shells of the British Islands, still containing only introductory matter. SIMROTH (472–476) and COLLINGE (80–84) have written several papers on slugs.

Amongst the papers specially devoted to the description of new forms we may note those of PILSBRY (391, &c.) and MOELLENDORFF (326) relating, respectively, to America and West China; as also that of FULTON (168) on some islands of the Malay Archipelago, and those of BAVAY and DAUTZENBERG (21) on Tonkin. SMITH (489) has described some further forms from British Central Africa. The Mollusca of Lake Tanganyika have again attracted attention; MOORE (335, 335A) has published further contributions to our anatomical knowledge and MARTEL and DAUTZENBERG (286) have described some new forms, while NICOLAS (354) has written on the origin of the fauna.

In dealing with marine shells the first place may be given to HEDLEY'S (200–202) detailed account of the molluscs of Funafuti, Ellice Islands, which forms a valuable addition to our knowledge of the Polynesian fauna. HERVIER (211, 212) has given further study to the fauna of New Caledonia; we regret that this interesting series of papers may now cease. A few nudibranchs from Samoa have been enumerated by ELIOT (145), and a good series of molluscs from the Torres Straits has been catalogued by MELVILL and STANDEN (310). The Australasian fauna has formed the subject of papers by TATE (535–539), PRITCHARD and GATLIFF (424, 425), SUTER (524–529), and others; while SMITH (487) has described a few deep-sea forms from the Indian Ocean. Amongst a number of papers dealing with the American fauna may be noted those of BUSH (67) on some *Turbonillidæ* and STEMPELL (514) on Chilian *Pelecypoda*. APPELLÖF (10), LÖNNBERG (275), and JOUBIN (231) have dealt with collections of *Cephalopoda* from Ternate, Tierra del Fuego, and the Atlantic Ocean respectively.

Of the anatomical papers on *Cephalopoda* we may note, in addition to those last named, that of KOPSCH (255) on the optical ganglion. The causes

of asymmetry have been considered by BOUTAN (51), while DE BRUYNE (58) has studied the effect of phagocytosis on development. DESCHAMPS (131) has written on the anatomy of the *Pulmonata*; *Neritina* has attracted the attention of LACAZE-DUTHIERS (259) and LENSSEN (264, 265); PILSBRY and VANATTA (413) have described the anatomy of some South American *Achatinidæ*; while several papers by PARAVICINI (373–376) will repay attention. We may also mention the study by BOTTAZZI (48) of the œsophagus in *Aplysia* and an interesting note by FISCHER (154) on the habits of *Patella*. DREW (142) has written on the *Protobranchiata*; BEUK (26) has described the morphology of *Teredo*; JOHNSTONE (230) has given an interesting account of *Cardium*; and GROBBEN (183) has dealt with the anatomy of *Tridacna*. PLATE (414, 415) has issued an elaborate account of the anatomy of the *Polyplacophora*; while HEATH (199) has written on the development of *Ischnochiton*.

KOBELT and MOELLENDORFF (251) have completed their catalogue of a portion of the operculated landshells; a protest may be made against their having issued an index, in the original periodical, which gives references to the pagination of the authors' reprints only, though a key is given. DALL (116–118) has written some valuable systematic papers and GUDE (187) has completed his study of the armature in *Plectopylis*.

Brief as are the above notes on the literature relating to the recent Mollusca, those relating to paleontology must be still more compressed; we can only point out that the following will be of special interest to recent students: SACCO (449, 451), ROMAN (444), TATE (539), and KENNARD and WOODWARD (241).

As an illustration of the difficulties which beset the Recorder, we may note a paper by POPOVICI-HATZEG (421): here, quite apart from the trouble given by the papers in the volume being separately numbered and paged, the numbering of the plates appears to have fallen into utter confusion.

We desire to call attention to a practice, sprung up of recent years, of authors writing papers devoted simply to the renaming of genera on the ground that the names have already been used. In a number of cases, more care would have shewn that there were subsequent names which could have been utilized, and in one case in the past year the new name—marred on its appearance by a typographical error in its first letter—has itself, when corrected, already been replaced, as having been previously used in Zoology.

TITLES*.

1. ALESSANDRI, G. DE. Fossili cretacei della Lombardia. Palæontogr. ital. iv, 1898, pp. 169–202, pls. xiv–xvi.

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II. BIOLOGY

A. ANATOMY, PHYSIOLOGY

1. GENERAL.

[illegible]

2. Shell and Integument.

Development of internal shells in the *Octopoda*; Appellöf (9).—Corrosion of shells in cabinets is caused by butyric acid; Byne (68).

Variation of *Limnæa*; Crowther (110).—Tentacles of *Nautilus*; Griffin (181).—Shell of *Placunanomia* adapted to site; Griffin (180).—The pigments of *Aplysia punctata*; MacMunn (281).—Variation in *Gastropoda*; Martens (292).—Morphology of the Pelecypod shell, especially in the *Veneridæ*; Noetling (357).—Structure of the hinge in Pelecypoda; Noetling (356 & 357).—Red coloration in the interior of the shells of *Anodonta plana* caused by a distomid parasite; Osborn (370).—On reparation and renewal of the shell in pulmonate Gastropods; Paravicini (374).—Note on Pelecypod variation; Parkinson (377).—On the formation of pearls; Parville (379).—Abnormalities in *Planorbis* due to *Epistylis anastatica*; Standen (501).—On pigment in the Mollusca; Steinmann (511).—Shell and hinge in *Cycladidæ*; Sterki (515).—Study of hinge in *Pelecypoda*; Vest (569, 570).

3. Muscular System.

Muscles in boring Pelecypods; Lloyd (267).—Reflex action of muscles in *Helix pomatia*; Pompilian (417).—Muscular contraction in *Helix pomatia*; Pompilian (418).

4. Digestive System.

On the function of the so-called liver in Mollusca; Biedermann & Moritz (28).—On cellulose in the hepatic secretions of snails; Biedermann & Moritz (27).—The action of electrical stimuli upon the œsophagus of *Aplysia depilans* and *A. limacina*; Bottazzi (48).—On the functions of the liver in the *Pulmonata*; Cuénot (112).—Pigmentation of liver in the Invertebrata; Dastre & Floresco (124).—The intestinal epithelial cells in *Helix*; Ellerman (146).—Digestive system in *Neritina fluviatilis*; Lenssen (264).—Gastric gland in Mollusca; MacMunn (280).—On the digestive tract and the "Centro stomato-gastrica" in *Aplysia*; Mazzarelli (299).—Finer structure of stomach in terrestrial Gastropods; Monti (331).—Radula in *Hyalinia*; Moss (337).—Innervation of digestive canal in *Helix pomatia*; Paravicini (375).—Radula of *Helicina*, *Cyclophoridæ*, *Cyclostomatidæ*, *Zonitidæ*, *Helicidæ*, *Buliminus*, and *Streptaxis*; Sarasin (456).—Radula of *Paryphanta*, *Rhytida*, *Trophon ambiguus*, and *T. patens*; Suter (526).—Note on abnormal radula in land shells; Suter (526).—Radula of *Donovania minima*; Woodward (591).

5. Circulatory System.

Pulsation of heart in land and freshwater molluscs; Baker (18).—Phagocytosis in the development of the Invertebrates; Bruyne (58).—Cardiac movement in Pelecypods; Dubois (144).

6. Respiratory System.

[None.]

7. Excretory and Secretory Systems.

Secretion by albumen gland in *Helix pomatia*; Camus (69): See also Camus, C.R. Soc. Biol. i, pp. 724 & 725.—The excretory organs in Mollusca;

CUÉNOT (111).—On the morphology of the primitive kidney in the *Pulmonata*; MEISENHEIMER (302).—Salivary glands in terrestrial Gastropods; MONTI (332).—Note on salivary glands in terrestrial molluscs; MONTI (330).—On the origin of the primitive kidney in *Limnæa*; NEKRASSOV (344).—Epiphragm of *Achatina immaculata*; SMITH (483).

8. NERVOUS SYSTEM.

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15. Collecting and Arrangement.

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B.—*DISTRIBUTION.*

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a. PALÆARCTIC ZONE.

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Scotland:—Landshells of Ailsa Craig, Clyde; SCOTT, P. Nat. Hist. Soc. Glasgow v, p. 157.—Renfrewshire: *Testacellidæ* from; HOGG, t. c. p. 467.—Perth: *Vertigo pygmæa* and other molluscs; EVANS, Ann. Scott. Nat. Hist. 1899, p. 117.

Ireland:—Variation of *Helix nemoralis*; ANON., Sci. Gossip v, p. 229: *Arion empiricorum*; COLLINGE (82).—Limerick: Landshells; MASSY, Irish

Natural. viii, p. 143.—Galway: Landshells; WELCH, t. c. p. 143.—Macgillicuddy's Reeks: Some landshells, with n. var. of *Limax marginatus*; SCHARFF & CARPENTER (459).—Kerry: *Pupa anglica*, white variety; COLLIER, J. Conch. ix, p. 152.

Belgium:—Popular notes; GREENE, J. Conch. ix, p. 252: *Neritina leodica* = *N. fluviatilis*; DEWALQUE (133).

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Switzerland:—Review of *Clausilia*, also lists of collections from Disentis and Lugano; STOLL (519).—Fauna of Lake Lucerne, with *Pisidium clessini*, n. sp.; SURBECK (523).

Germany:—*Assiminea grayana*, Leach, in the Weser Province; PLATTKE (416).—Saxony: Non-marine fauna; WOHLBEREDT (587).—Schleswig: Freshwater *Pelecypoda*; MERKEL (315).—Baden: Notes on fauna; NAEGELE (343).—Lubeck: Land and freshwater shells; RANKE (431).—Nurnberg: Land and freshwater shells; KOCH (252).—Heilbronn: *Dreissensia polymorpha*; LAMPERT, Jahresh. Ver. Wurttemb. lv, p. lii.

Austria:—Rediscovery of *Aspidoporus limax*, Fitz.; BABOR (15).—Thuringia: Occurrence of *Helix caperata*; KOCH (253).

Finland:—Notes on Slugs; SIMROTH (476).

Russia:—Slug fauna; SIMROTH (472).

2. *Circum-Mediterranean Region.*

Spain:—Land and freshwater shells from Lozoya; FERNANDEZ NAVARRO, Act. Soc. Espan. 1899, p. 68.

Portugal:—Fauna, with n. spp. of *Anodonta*, *Cæcilianella*, *Ferussacia*, *Helix*, *Hyalinia*, *Limnæa*, *Margaritana*, *Paludestrina*, *Peringia*, *Physa*, *Pisidium*, *Pupilla*, *Sphærium*, and *Unio*; LOCARD (269).

Italy:—*Horatia* (*Hauffenia*) *tellinii* and *valvatæformis*, n. spp.; POLLONERA (417): Notes on some land shells; MARTENS (291).—Naples: List of land and freshwater shells; BELLINI (24, 25).—Venice: List of land and freshwater shells; CHIAMENTI (76).

Bosnia:—New species of *Zonites*; KIMAKOWICZ (244).

Montenegro:—New forms of *Clausilia*; MOELLENDORFF (323): N. spp. of *Clausilia* and *Hyalinia*; MOELLENDORFF (325).

East Roumelia:—Notes on slugs; BABOR (16).

Smyrna:—New var. of *Zonites compressus*; KOBELT in MARTINI & CHEMNITZ (296).

Transcaucasia:—*Buliminus* (*Petræus*) *valentini*, n. sp.; KOBELT in MARTINI & CHEMNITZ (296).

Asia Minor:—*Clausilia blissi*, n. sp.; BOETTGER (39): *Buliminus* (*Petræus*) *edessanus*, n. sp.; KOBELT in MARTINI & CHEMNITZ (296): *Clausilia semidenticulata*, Pfr.; BLISS, J. Conch. ix, p. 211: Landshells; BLISS (33): New species of *Mesolimax*; SIMROTH (475).—Syria: *Planorbis libanicus*, n. sp.; WESTERLUND (583).

Persia:—*Helix* (*Pomatia*) *salomonica*, n. sp.; NAEGELE (342): List of some land and freshwater species; SMITH (488).

Libyan Desert:—*Eremia zitteli*, n. sp.; BOETTGER (38).

Algeria:—*Vitrea prodigiosa*, n. sp.; ANCEY (7).

3. *Central Asiatic Region.*

Central Asia:—Notes on land shells, with *Cathaica cunlunensis*, n. sp. (Thibet); MOELLENDORFF (326).

Turkestan:—*Buliminus urgutensis*, n. sp.; KOBELT in ROSSMAESSLER (446): *Anodonta retteri*, n. sp.; DROUET (143).

4. *Chinese Region.*

China:—Landshells collected by Széchenyí; HILBER (213): Freshwater shells collected by Széchenyí, with n. spp. of *Anodonta*, *Fossarulus*, *Limnæus*, *Lithoglyphus*, *Mytilus* [? *Dreissensia*], and *Unio*; NEUMAYR (347): Sechuen: *Anadenus sechuenensis*, n. sp.; COLLINGE (83).

West China:—Notes on land shells, with n. spp. of *Aegista*, *Anadenus*, *Buliminopsis*, *Camæna*, *Cathaica*, *Euhadra*, *Eulota*, *Kaliella*, *Læocathaica* (n. gen.), *Macrochlamys*, *Patula*, *Platypetasus*, *Plectotropis*, *Satsuma*, *Stilpnodiscus* (n. gen.), and *Xestina* (?); MOELLENDORFF (326).

5. *Japanese Region.*

Japan:—New species of *Diplommatina*, *Ennea*, *Eulota*, and *Ganesella*; PILSBRY (409).

6. *Atlantidean Region.*

Madeira:—Recent specimen of *Helix lowei*; NORMAN (359).

Tenerife:—Occurrence of *Limax maximus*, *L. marginatus*, and *Agriolimax agrestis*; COLLINGE & PARTRIDGE, J. Malac. vii, p. 38.

b. PALÆOTROPICAL AFRICAN ZONE.

7. *Central African Region.*

British Central Africa:—New species of *Achatina*, *Buliminus*, *Curvella*, *Ennea*, *Helicarion*, *Martensia*, *Phasis*, *Pomatias*, *Streptaxis*, *Subulina*, *Thapsia*, *Trochozonites*, and *Zingis*; SMITH (489).

Upper Congo:—*Achatina weynsi*, n. sp.; DAUTZENBERG (126).

Congo Free State:—New species of *Cleopatra*, *Cyclophorus*, *Ennea*, *Hapalus*, *Helicarion*, *Pseudoglessula*, *Pseudopeas* (n. subgen. *Stenogyridæ*), *Streptaxis*, and *Subulina*; PUTZEYS (428): *Galatcia duponti* found living; CORT (91).

Lake Tanganyika:—Origin and nature of the fauna; NICOLAS (354): Shells from, with n. spp. of *Nassopsis* and n. var. of *Paramelania imperialis*; MARTEL & DAUTZENBERG (286).

8. *West African Region.*

St Helena:—The zoogeographic position; KOBELT (248).

Cameroons:—A few land and freshwater shells; ROCHEBRUNE (441).

9. *South African Region.*

S. Africa:—Review of fauna, with n. spp. of *Achatina*, *Buliminus*, *Cyclotus* (?), *Ennea*, *Limnæus*, *Livinhacia*, *Opeas*, *Pupa*, *Spatha*, and *Succinea*; STURANY (521): Notes on fauna with n. spp. of *Auricula*, *Balea*, *Curvella*, *Ennea*, *Pupa*, *Trachycystis*, *Trochomorpha*, and *Zingis*; MELVILL & PONSONBY (309).

10. *Malagasy Region.*

[None.]

11. *Afro-Arabian Region.*

Somaliland:—Shells, with n. spp. of *Buliminus* and *Ennea*; SMITH (490): *Limicolaria habrawalensis*, n. sp.; JOUSSEAUME (236).

Djibouti:—*Petræus ambouliensis*, n. sp.; JOUSSEAUME (236).

Arabia:—*Petræus socialis* and *P. schoukraensis*, n. spp.; JOUSSEAUME (234).

Sokotra:—New species of *Buliminus*; SMITH (492).

Abd-el-Kuri:—New species of *Buliminus* and *Lithidion*; SMITH (492).

c. PALÆOTROPICAL ORIENTAL ZONE.

12. *Indian Region.*

Indian Region:—Notes on the fauna; GODWIN-AUSTEN (172): Notes on zoogeography; KOBELT (249).

India:—Study of many forms, with n. spp. of *Austenia*, *Girasia*, and *Macrochlamys*; GODWIN-AUSTEN (171): New species of *Ennea* and *Streptaxis*; BLANFORD (31).—North India (?): *Buliminus* (*Napæus*) *linteræ*, n. sp.; KOBELT in MARTINI & CHEMNITZ (296).—Mysore: *Ariophanta dalyi*, n. subsp. of *A. cysis*; BLANFORD (30).—Bombay: Notes on land shells; BLANFORD (32): Occurrence of *Stenogyra octona*; PEILE, J. Bombay Soc. xii, p. 785.

Ceylon:—Study of many forms, with n. spp. of *Euplecta* and *Microcystis* (?); GODWIN-AUSTEN (171): Notes on species of *Leptopoma*, with n. spp. of *Cataulus*, *Cyathopoma*, *Cyclophorus*, *Kaliella*, and *Lagocheilus*; SYKES (533): New varieties of *Cataulus nietneri*; COLLETT (79): *Streptaxis ravanæ*, n. sp.; BLANFORD (31).

13. *Indo-Chinese Region.*

Assam:—New species of *Plectopylis*; GUDE (187).

Burma:—New species of *Ennea* and *Streptaxis*; BLANFORD (31): List of some land and freshwater species, with *Corbicula noetlingi*, n. sp.; MARTENS (289): *Plectopylis woodthorpei*, n. sp.; GUDE (187).

Malay Peninsula:—*Unio pahangensis*, n. sp.; SMITH (485).

Shan States:—New species of *Eulota*, *Glessula*, and *Rhiostoma*; MOELLENDORFF (324).

Perak:—*Hemiplecta floweri*, n. sp.; SMITH (482).

Selangor:—*Stenogyra tschehelensis* in caves; RIDLEY (439).

Laos:—New species of *Bensonia* and *Otesia*; MOELLENDORFF (324).

Tonkin:—New species of *Clausilia*, *Helix*, and *Pupina*; BAVAY & DAUTZENBERG (21): *Plectopylis françoisi*, n. sp.; FISCHER (153): *Amphidromus dautzenbergi*, n. sp.; FULTON (169): *Buliminus mantongensis*, n. sp.; KOBELT in MARTINI & CHEMNITZ (296): *Plectopylis congesta*, n. sp.; GUDE (187).

14. *Indo-Malay Region.*

Malay Archipelago:—Fauna of several islands; FULTON (168).

Sumatra:—List of a collection with n. spp. of *Cerithidea* and *Stenothyra*; DAUTZENBERG (125).

Java:—*Nanina* (*Hemiplecta*) *patens*, n. sp.; MARTENS (289).

Bali I.:—New species of *Carychium* and *Diplommatina*; FULTON (168).

Sumbawa:—New species of *Ariophanta* and *Hemiplecta*; SMITH (486).

Flores:—New species of *Planispira*, *Rhysota*, and *Xesta*; SMITH (486).

Adonara I.:—*Planispira adonarana*, n. sp.; FULTON (168).
Alor Island:—*Amphidromus oscitans*, n. sp.; MARTENS (289).
Timor:—*Omphalotropis tenuis*, n. sp.; FULTON (168).
Sumba I.:—*Diplommatina baliana*, n. sp.; FULTON (168): *Chloritis conjecta*, n. sp.; SMITH (486).
Sangir I.:—New species of *Cyclophorus* and *Pupina*; FULTON (168).
Pulo Laut I.:—*Diplommatina lævis*, n. sp.; FULTON (168).
Borneo (?):—*Bellardiella crassilabris*, n. sp.; MOELLENDORFF (322).

15. *Philippine Region.*

Philippines:—*Naninidæ*; MOELLENDORFF (319): *Philippinella moellendorffi*, n. sp.; COLLINGE (84).

d. AUSTRALIAN ZONE.

16. *Austro-Malayan Region.*

Malay Archipelago:—Fauna of several islands; FULTON (168).
Celebes:—Land fauna, with n. spp. of *Alycæus*, *Amphidromus*, *Atopos*, *Chloritis*, *Clausilia*, *Cyclotus*, *Diplommatina*, *Endodonta*, *Helicarion*, *Lagochilus*, *Lamprocystis*, *Leptopoma*, *Nanina*, *Philomycus*, *Porocallia*, *Sitala*, *Stenogyra*, *Streptaxis*, *Trochomorpha*, *Vaginula*, and *Vitrinoconus*; SARASIN (456): New species of *Diplommatina* and *Streptaxis*; FULTON (168): *Leptopoma manadense*, var. nov. *obsoleta*; SCHEPMAN (461): *Clausiliæ* of; SYKES (534).
Gilolo:—New species of *Pupina*; FULTON (168).
Obi Island:—*Helix* (*Papuina*) *piliscus*, *H.* (*Albersia*) *obiensis*, n. spp.; MARTENS (289).
Damma I.:—Non-marine shells, with n. spp. of *Chloritis*, *Eulota*, *Macrochlamys*, and *Nanina*; SMITH (479): New forms of *Chloritis*, *Leptopoma*, *Macrochlamys*, *Otesia*, and *Plectotropis*; MOELLENDORFF (323).
Buru I.:—New species of *Callianella* and *Chloritis*; FULTON (168): New species of *Omphalotropis* and *Planispira*; PONSONBY & SYKES (420).
Tenimber I.:—New species of *Adelomorpha*, *Hypselostoma*, and *Pupa*; FULTON (168).
Talaut I.:—*Diplommatina talautana*, n. sp.; FULTON (168).
Louisiades:—*Paryphanta louisiadarum*, n. sp.; MOELLENDORFF (322).
New Guinea:—New species of *Bellardiella* (uncertain loc.), *Hemiplecta*, and *Papuina*; MOELLENDORFF (322).
British New Guinea:—*Papuina chilochroa*, n. sp.; DA COSTA (114).
Dutch New Guinea:—*Hemiplecta rollei*, n. sp.; MOELLENDORFF (323).
New Britain:—*Dendrotrochus mentum*, n. sp.; HEDLEY (204).

17. *Australian Region.*

Queensland:—*Papuina mayana*, n. sp.; HEDLEY (204): *Thersites pachystyla*, n. var.; COX (101).
? Queensland:—*Thersites webbi*, n. sp.; PILSBRY (408).
West Australia:—*Buliminus* (*Liparus*) *gratwicki*, n. sp.; COX (102).
New South Wales:—*Endodonta aculeata*, n. sp.; HEDLEY (204).
South Australia:—New species of *Angasella*, *Flammulina*, *Glyptorhagada*, and *Helicina*; TATE (538).

18. *Austro-Polynesian Region.*

Mid-Pacific:—A Zoogeographical scheme; HEDLEY (205).

19. *Polynesian Region.*

Hawaiian Islands:—New species of *Endodonta*, *Leptachatina*, *Melania*, *Microcystis*, *Pterodiscus*, *Succinea*, and *Thaanumia* (n. gen.); ANCEY (5): Illustrations of unfigured species; SYKES (531).

Funafuti, Ellice Islands:—A few non-marine Mollusca; HEDLEY (200).

20. *Neozealanian Region.*

New Zealand:—Bibliography of new species since 1890; SUTER (529): Notes on land shells; MURDOCH (340): New species of *Endodonta*, *Flammulina*, and *Paryphanta*; SUTER (524): Notes on land shells, with *Endodonta ureweraensis*, n. sp.; SUTER (526).

Norfolk Island:—Fauna, with *Endodonta norfolkensis*, n. sp.; HEDLEY (204).

e. NEANTARCTIC ZONE.

21. *Patagonian Region.*

Argentina:—Species of *Ampullaria*; IHERING (225).

22. *Chilian Region.*

Chili:—*Stephanoda latastei*, n. sp.; ANCEY (8): Notes on some Slugs; SIMROTH (473).

f. NEOTROPICAL ZONE.

23. *Peruvian Region.*

Peru:—*Epiphragmophora andivaga*, n. sp.; ANCEY (8).

24. *Colombian Region.*

Ecuador:—*Pupisoma americanum*, n. sp.; MOELLENDORFF (322): *Rhodea æquatoria*, n. sp.; DA COSTA (114).

U. S. of Colombia:—*Rhodea crosseana*, n. sp.; DA COSTA (114).

25. *Brazilian Region.*

S. America:—Relations of land mollusca; PILSBRY (402).

Brazil:—*Callionepion iheringi*, n. gen. & sp.; PILSBRY & VANATTA (413): *Simpulopsis tryoni*, n. sp.; PILSBRY in TRYON (551): *Potamolithus jacuhyensis*, n. sp.; PILSBRY (392): *Stephanoda iheringi*, n. sp.; ANCEY (8): *Streptaxis politus*, n. sp.; FULTON (169).

Bolivia:—New species of *Conulus* and *Epiphragmophora*; ANCEY (8).

26. *Mexican Region.*

Mexico:—New species of *Bifidaria*, *Glandina*, *Omphalina*, *Opeas*, *Polygyra*, *Praticolella*, *Pseudosubulina*, *Schazicheila*, *Sphærium*, *Spiraxis*, *Streptostyla*, *Succinea*, and *Thysanophora*; PILSBRY (406): New species of *Ampullaria*, *Ancylus*, *Planorbis*; MARTENS (288): Note on land fauna of Tres Marias Islands; STEARNS, Nautilus xiii, p. 19.

Nicaragua, Costa Rica, & Panama:—*Ampullaria costaricana*, n. sp.; MARTENS (288).

Guatemala:—New species of *Cochliopa*; MARTENS (288).
Costa Rica:—New species of *Amnicola*, *Ampullaria*, *Cochliopa*; MARTENS (288).
Cocos Islands, Costa Rica:—Land fauna; KOBELT (250).

27. *Caribbean Region.*

Jamaica:—New species of *Lucidella*; PILSBRY (399): List of land and freshwater shells; VENDRYES (568).
Dominica:—*Amphibulima browni*, n. sp.; PILSBRY in TRYON (551).
Porto Rico:—*Gæotis malleata*, n. sp.; PILSBRY in TRYON (551).
Haiti:—*Drymæus sallei*, n. sp.; PILSBRY in TRYON (551).

g. NEARCTIC ZONE.

28. *American Region.*

N. America:—Species of *Conulus*, with new varieties; PILSBRY (393): New *Pupidæ*; STERKI (516): New species of *Unio*; WRIGHT (592).
United States:—Notes on *Pisidia*, with n. spp.; STERKI (517): Notes on *Polygyra* with new species; PILSBRY (397): Notes on land shells, with *Pupa superioris* and *Vitrea rhoadsi*, n. spp.; PILSBRY (391): Notes on group of *Vitrea indentata*; COCKERELL, Nautilus xii, p. 120: *Amnicolidæ*, with n. spp. of *Fluminicola* and *Paludestrina*; PILSBRY (394).—Florida: *Bifidaria rhoadsi*, n. sp.; PILSBRY (407): *Ampullaria miamiensis*, n. sp.; PILSBRY (405): *Amnicolidæ*, with n. spp. of *Amnicola* and *Paludestrina*; PILSBRY (396): List of shells from Miami; RHOADS (438): Occurrence of *Physa cubensis*; PILSBRY, Nautilus xiii, p. 70.—Texas: *Zonitoides nummus*, n. sp.; VANATTA (566).—Great Smoky Mts.: Collecting in; FERRISS (148).—Sabine River: *Unionidæ* of; FRIERSON, Nautilus xiii, p. 79.—Maine: Note on fauna; STRODE, Nautilus xiii, p. 59.—North Carolina: *Gastrodonta cœlaxis*, n. sp.; PILSBRY (395).—Illinois: Shells from Lilycash Creek: BAKER; Nautilus xiii, p. 30: *Pisidium handwerki*, n. sp.; STERKI (518).—Oakdale, Tenn.: Land shells; CLAPP, Nautilus xiii, p. 70.—Berks Co., Penn.: Land shells; PILSBRY, Nautilus xiii, p. 70.—Pittsburg, Pa.: Molluscan fauna; RHOADS (437).—Massachusetts: Varieties of *Tachea nemoralis*; COCKERELL, Nautilus xiii, p. 32.—Washington: Occurrence of *Arion fasciatus*; COLLINGE, Nautilus xiii, p. 9.—New York: Fauna of Canandaigua lake region; MITCHELL (318).—Owasco Lake, N. Y.: Fauna of; BAKER (17).—Oregon: *Vertigo andrusiana*, n. sp.; PILSBRY (404): *Pristiloma pilsbryi*, n. sp.; VANATTA (564).—Michigan: Terrestrial Mollusca; WALKER (577): *Limnæa gracilis*; KIRKLAND, Nautilus xii, pp. 119, 131: Shells with remains of *Mastodon*; SMITH (495): See also WALKER, Nautilus xiii, p. 55.

29. *Californian Region.*

California:—Occurrence of *Pomatia aspersa*; KEEP, Nautilus xiii, p. 60.
Northern California:—Notes on fauna; PILSBRY (400).
Arizona and New Mexico:—Collecting in; ASHMUN (12).
New Mexico:—*Ashmunella pseudodonta*, n. subsp.; COCKERELL (78): Shells near Roswell; PILSBRY, Nautilus xiii, p. 79.

30. *Canadian Region.*

Canada:—Occurrence of two land shells; TAYLOR (541).—Manitoba: Faunal list; HANHAM (191).
Vancouver:—*Pristiloma taylori*, n. sp.; PILSBRY (401).
Klondyke:—Land and freshwater shells; RANDOLPH (429).

MARINE MOLLUSCA.

Various localities of marine species of *Gastropoda* in the Leiden Museum; HORST & SCHEPMAN (222).

1. *Arctic Province.*

On the supposed resemblance of Arctic and Antarctic faunas; THOMPSON (544).

White Sea:—Fourteen species of Molluscs; SINITSIN, Rabot. Lab. Warsaw 1897 [?1899], p. 228.

2. *Boreal Province.*

[None.]

3. *Celtic Province.*

N. Atlantic:—New species of *Teleoteuthis*, *Entomopsis*, *Dubioteuthis*; JOUBIN (231).

Swedish Coast:—Embryonic forms; AURIVILLIUS (14).

British Islands:—Revision of some families of the *Gastropoda*; NORMAN (360): Notes on marine fauna; MARSHALL (285): *Nudibranchiata*; COOKE (89): Fauna near thirty-fathom line between Eddystone and Start Point; ALLEN (2).—Falmouth: Nudibranchs and *Sepia*; VALLENTIN (563).—Tenby: Marine Mollusca; SPAN (500).—Norfolk Coast: Species of *Fusus*; GREENE, J. Conch. ix, p. 215.—Hilbre Island: Notes on *Archidoris* and *Tritonia*; FORBES (160).—Lothians: Effects of a gale on marine life; EVANS, Ann. Scott. Nat. Hist. 1899, p. 6: *Rossia macrosoma* and *Eledone cirrhosa*; EVANS, t. c. p. 53.—Mollusca collected in cruise off Irish Coasts; CHASTER (74).—Donegal: Marine fauna; TATLOW (540).—Kenmare: Marine shells; PRAEGER, Irish Natural. viii, p. 164.

4. *Lusitanian Province.*

France:—Pelagic and deep-water fauna; LOCARD (268): Collection from Guéthary and St-Jean-de-Luz; FISCHER (158): New species of *Ocinebra*; LOCARD (270).

Gulf of Gascony:—Occurrence of *Melampus*; FISCHER (156).

Portugal:—List of marine mollusca continued; NOBRE (355).

Mediterranean:—*Neptunea sinistrorsa*, Desh.; MELI (305): *Stylomenia salvatori*, *Strophomenia lacazei*, n. gg. & n. spp.; PRUVOT (426): *Cephalopoda* of Messina; FICALBE (150): Collection of Pteropods and Heteropods, with n. spp. of *Atlanta* and *Sinusigera*; OBERWIMMER (363): Notes on species of *Pollia*; LOCARD (271).

Adriatic:—List of a few species; CONDORELLI (86): *Pecten intermedius*, n. sp.; MONTEROSATO (328).—Istria: *Proteopecten liburnicus*, n. gen. & sp.; MONTEROSATO (328).

Cyprus:—Collection of Gastropods and Pelecypods; MONTEROSATO (329).

5. *Aralo-Caspian Province.*

[None.]

6. *West African Province.*

[None.]

7. *South African Province.*

S. Africa:—New species of *Calliostoma*, *Columbella*, *Cominella* (?), *Eulima*, *Fenella*, *Loripes*, *Lotorium*, *Marginella*, *Montacuta*, *Odostomia*, *Plicatula*, and *Terebra*; SMITH (491): *Neptuneopsis gilchristi*, n. gen. & sp.; SOWERBY (496): New species of *Chiton* and *Dinoplax*; SYKES (532).

8. *Indo-Pacific Province.*

Somaliland:—*Lampas bardeyi*, n. sp.; JOUSSEAUME (237): A few shells collected by ROBECCI enumerated in his 'Somalia e Benadir,' Milan, 1899, p. 684.

Red Sea:—New species of *Ostrea*; MARTENS (287): Marine Mollusca frequently cited; JOUSSEAUME (233).

Arabian Sea:—*Conus* (*Cylinder*) *clytospira*, n. sp.; MELVILL & STANDEN (311).

Gulf of Oman:—*Clathurella omaleyi*, n. sp.; MELVILL (307).

Persian Gulf:—New species of *Cryptodon*, *Diplodonta*, *Drillia*, *Fusus*, *Lacuna*, *Lucina*, *Mactrinula*, *Mangilia*, *Mitra*, *Nassa*, *Priotrochus*, *Scintilla*, and *Pyrgulina*; MELVILL (307).

Karachi:—New species of *Actæopyramis*, *Cryptodon*, *Diplodonta*, *Erato*, *Mangilia*, *Natica*, *Odostomia*, *Scalaria*, and *Pyrgulina*; MELVILL (307).

Mekran Coast:—New species of *Latirus*, *Mangilia*, and *Œdalina*; MELVILL (307).

Indian Ocean:—New species of *Abra*, *Ancilla*, *Arca*, *Astralium*, *Cancellaria*, *Columbella*, *Coralliophila*, *Drillia*, *Fissurella*, *Fusus*, *Leptothyra*, *Lima*, *Myodora*, *Nassa*, *Nassaria*, *Pisania*, *Pleurotoma*, *Puncturella*, *Scalaria*, *Solariella*, *Tellina*, *Tritonidea*, *Trophon*, and *Turbo*; SMITH (487).

Port Canning:—*Nassa subconstricta*, n. sp.; SOWERBY (498).

Andaman Islands:—Sixty-nine species, with n. spp. of *Mitra*; MELVILL & SYKES (314).

Philippines:—*Tridacna obesa*, n. sp.; SOWERBY (497).

Sumatra:—List of small collection; DAUTZENBERG (125).

Ternate:—Account of collection of *Cephalopoda*; APPELLÖF (10).

Banda Neira:—*Dolabella neira*, n. sp; CLESSIN in MARTINI & CHEMNITZ (296).

Hawaiian Islands:—*Mitra baldwinii*, n. sp.; MELVILL (308).

"Isles of the Pacific":—*Cypræa mauritiana*, new var.; MELVILL & STANDEN (313).

South-west Pacific:—Distribution of the living species of *Nautilus*; WILLEY (585).

New Caledonian Archipelago:—Review of *Columbellidæ*, with n. spp.; HERVIER (212): Species of *Mitra* and *Triforis* figured; HERVIER (211).

Loyalty Islands:—*Herviera isidella*, n. gen. & sp.; MELVILL & STANDEN (312).

Fiji Islands:—*Eulima vitrea*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (296).

Funafuti, Ellice Islands:—*Gastropoda*, with critical notes, and n. spp. of *Akera*, *Atys*, *Cæcum*, *Cerithiopsis*, *Cerithium*, *Cirsonella*, *Clathurella*, *Columbella*, *Contumax* (n. gen.), *Cylichna*, *Diala*, *Eulima*, *Marginella*, *Murex*, *Nassa*, *Ovula*, *Phenacolepas*, *Retusa*, *Ringicula*, *Rissoa*, *Rissoina*, *Scala*, *Scaliola*, *Stylifer*, *Teinostoma*, *Thetidos* (n. gen.), *Triforis*, and *Turricula*; HEDLEY (200): *Pelecypoda*, with n. spp. of *Cardita*, *Kellia*, *Lucina*, *Nausitoria*, and *Tellina*; HEDLEY (201): New species of *Cadulus*, *Cæcum*, *Diala*, *Eulima*, *Limopsis*, *Liotia*, *Mecoliotia*, n. gen., *Odontostomia*, *Ringicula*, *Rissoa*, *Schismope*, *Scissurella*, and *Teinostoma*; HEDLEY (202).

Samoa:—Nudibranchs and Tectibranchs, with n. spp of *Aplysia*, *Doridium*, and *Elysia*; ELIOT (145).

Torres Straits:—List of species with n. spp. of *Barbatia*, *Bittium*, *Calliostoma*, *Cardium*, *Chione*, *Diplodonta*, *Eulima*, *Magadis*, *Mangilia*, *Microtheca*, *Kellia*, *Loripes*, *Murex*, *Nassa*, *Pectunculus*, *Phenacolepas*, *Pholadomya*, *Psammobia*, *Tellimya*, *Tellina*, and *Triforis*; MELVILL & STANDEN (310).

9. *Australo-Zealandic Province.*

Australia:—Critical review of *Cyclostrematidæ* and *Liotiidæ*; TATE (536): Critical review of species of *Rissoia* and *Rissoina*; TATE (537): *Aplysia australiana*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (296).

Brisbane:—Occurrence of *Kuphus mannii*; HEDLEY, Rec. Austral. Mus. iii, p. 134.

North-west Australia:—New species of *Astele* and *Marginella*; SMITH (481): Notes on fauna, with n. spp. of *Calliostoma*, *Cancellaria*, *Monilea*, and *Terebra*; SMITH (484).

S. Australia:—New species of *Cyclostrema* and *Liotia*; TATE (536): New species of *Rissoina*; TATE (537).

Victoria:—New species of *Ancilla*, *Cancellaria*, *Marginella*, and *Trichotropis*; PRITCHARD & GATLIFF (425): Check-list of fauna continued; PRITCHARD & GATLIFF (424): New species of *Cyclostrema* and *Liotia*; TATE (536): *Rissoina hedleyi*, n. sp.; TATE (537).

N. S. Wales:—*Eulima* (*Hypermastus*, n. subgen.) *coxi*, n. sp.; PILSBRY (403): Notes on some shells with *Austrosarepta* (n. gen.) *picta* and *Teinostoma starkeyæ*, n. spp.; HEDLEY (206).

Tasmania:—New species of *Cyclostrema* and *Liotia*; TATE (536): *Rissoina punctatissima*, n. sp.; TATE (537).

New Zealand:—Notes on marine species, with new vars. of *Purpura scobina* and *Trophon ambiguus*; SUTER (526): *Cirsonella* (?) *neozelanica*, n. sp.; MURDOCH (340): *Polyplacophora*; SUTER (527): *Pleurotomidæ*, with n. spp. of *Clathurella*, *Daphnella*, *Mangilia*, and *Surcula*; SUTER (528): Bibliography of new species since 1890; SUTER (529): Shells from Whangarei Heads; COOPER (90).

10. *Japonic Province.*

Japan:—*Guildfordia yoka*, n. sp.; JOUSSEAUME (235): New species of *Buccinum* and *Chrysodomus*; SOWERBY (499): *Aplysia sieboldiana*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (296): *Pleurotomaria salmiana*, n. sp.; ROLLE (442, 443).

11. *Aleutian Province.*

Bering Sea:—Five species, with n. spp. of *Valvatella*; SMITH (480): n. spp. of *Erycina* and *Mysella*; DALL (116).

Puget Sound:—Notes on Invertebrata; HARRINGTON & GRIFFIN (194).

Alaska:—*Eulima randolphi*, n. sp.; VANATTA (565).

Commander Islands:—Fauna; DALL (115).

Pribilof Islands:—Fauna; DALL (115).

Unalaska:—Marine shells; RANDOLPH (429).

12. *Californian Province.*

West America (N. and S.):—*Diplodontidæ*; DALL (118).

Western N. America:—*Leptonacea*, with n. spp.; DALL (116): *Solenidæ*; DALL (117).

California:—*Drillia empyrosia*, n. sp.; DALL (119): *Pteronotus carpenteri*, n. sp.; DALL (120): n. spp. of *Bornia*, *Mysella* and *Sportella*; DALL (116): *Ensis californicus*, n. sp.; DALL (117): Notes on *Eulima*, with n. spp.; VANATTA (565): *Haliotis fulgens*, n. var.; STEARNS (502): Note on fauna; KING, Nautilus xiii, p. 23: Occurrence of *Crepidula convexa*; STEARNS, t. c. p. 8.—San Francisco: Occurrence of *Modiola plicatula*; STEARNS (505): Occurrence of *Urosalpinx cinerens*; STEARNS (503).—San Pedro: shells from; LOWE (277).

13. *Panamic Province.*

[None.]

14. *Peruvian Province.*

Peru:—*Variolepis iquiquensis*, n. gen. & sp.; PLATE (415).
Chile:—Chitons of, with new species of *Callistochiton*, *Chætopleura*, *Lepidopleurus*; PLATE (415): List of marine species, with *Diplodontina tumbesiana*, n. g. and sp.; STEMPELL (514).
Juan Fernandez I.:—New species of *Arca*, *Chætopleura*, *Ischnochiton*, *Lasæa*, *Lepton*, and *Venerupis*; STEMPELL (514).

15. *Antarctic Province.*

On the supposed resemblance of Arctic and Antarctic faunas; THOMPSON (544).
Tierra del Fuego:—Cephalopods, with n. spp. of *Gonatus* and *Octopus*; LÖNNBERG (275).
Patagonia:—Littoral fauna, with *Sphenia hatcheri*, n. sp.; PILSBRY (410).
Straits of Magellan:—New species of *Avicula* and *Teredo*; STEMPELL (514).

16. *Argentine Province.*

Argentina:—*Diplodonta platensis*, n. sp.; DALL (118).
Uruguay:—New species of *Turbonilla*; BUSH (67).

17. *Caribbean Province.*

Brazil:—*Tagelus poeyi*, n. sp.; DALL (117).
Nicaragua:—*Tagelus poeyi*, n. sp.; DALL (117).
Mexico:—*Solen mexicanus*, n. sp.; DALL (117).
Cuba:—*Tagelus poeyi*, n. sp.; DALL (117).
St Thomas:—New species of *Turbonilla*; BUSH (67).
Jamaica:—*Diplodonta puncturella*, n. sp.; DALL (118).
Barbados:—New species of *Bornia* and *Mysella*; DALL (116).

18. *Transatlantic Province.*

East America (N. and S.):—*Diplodontidæ*; DALL (118).
Eastern N. America:—*Solenidæ*; DALL (117): *Leptonacea*, with n. spp.; DALL (116): Review of *Turbonillidæ*; BUSH (67): Northern range of *Melampus floridanus*; VANATTA, Nautilus xii, p. 107.
Florida:—New species of *Erycina* and *Montacuta*; DALL (116): New species of *Turbonilla*; BUSH (67): marine shells; WHITE, Nautilus xii, p. 142: Collection formed on Gulf coast; POST (422).

Cape Hatteras:—*Turbonilla unilirata*, n. sp.; BUSH (67).

Long Island:—Fauna, with n. spp. of *Corambella* (n. gen.) and *Polycerella*; BALCH (20).

Massachusetts:—*Montacuta percompressa*, n. sp.; DALL (116).

Carolina:—*Turbonilla stimpsoni*, n. sp.; BUSH (67): New species of *Anisodonta*, *Erycina*, *Montacuta*, and *Sportella*; DALL (116).

Bermuda:—New species of *Turbonilla*; BUSH (67): *Lasæa bermudensis*, n. sp.; BUSH, Science x, p. 251.

GEOLOGICAL.

N.B.—The remarks given at the beginning of the preceding section also apply here.

Several changes in nomenclature proposed; COSSMANN (95): Notes on some fossils from Madagascar; BOULE (49): Fossils from the Canary Islands, with many new spp.; ROTHPLETZ & SIMONELLI (447): Catalogue of figured types in American Museum continued; WHITFIELD (584): Recent work on fossil *Cephalopoda*; TORNQUIST (547): *Cephalopoda* of Seine-Inférieure; COULON (99): Development of *Lytoceras* and *Phylloceras*, with *L. alamedense*, n. sp.; SMITH (494): Fossils from Syria, with *Cardium dayi*, n. sp.; KINKELIN (246): New fossiliferous deposit in Calabria; STEFANO (506): Land and freshwater Mollusca from Eastern Bohemia; SCHUBERT (463): The Fossils of Ferdinando Bassi's "Tabella oryctographica," 1757; VINASSA DE REGNY (573).

1. POST-TERTIARY.

Distribution of Loess fossils; SHIMEK (469).—Note on *Helix* (*Tachea*) *tonnensis*; HOCKER (218).—Note on glacial deposit of Central Europe; GREDLER (176).

British Isles:—Pleistocene Beds of Thames Valley; KENNARD (240).—List of Mollusca from Glacial drift at Hunstanton; WHITAKER & JUKES-BROWNE, Mem. geol. Surv. U.K., 69 Old series, p. 90.—Antrim Pleistocene fossils; BELL, Irish Natural. viii, p. 210.—Holocene deposit at Reigate; BULLEN (61).

Germany:—Pleistocene shells from Süssenborn near Weimar; WEISS (580), pp. 162–165.—Shells from diluvial fresh-water beds near Werder; KOERT, Zeitschr. Deutsch. geol. Ges. li, Protok. p. 60.—Post-Pliocene shells from Thuringia; WÜST (593).

Switzerland:—Fauna of post-glacial deposit in St Gall; FRÜH, Vierteljahrschr. Ges. Zurich xliv, p. 178.

Italy:—Land, Freshwater, and Marine shells from excavations near Rome; CLERICI, Boll. Soc. geol. Ital. xviii, pp. 501–509.—*Typhis* (*Typhinellus*) *tetrapterus* (Bronn); MELI (304).—Pleistocene Mollusca from Morrocu; STEFANO (507).—Post-Pliocene Mollusca from Calabria; STEFANO (508).—Post-tertiary Mollusca from Calabria; STEFANO, Boll. Soc. geol. Ital. xviii, pp. 132–139.—List of Quaternary Mollusca found with Mammalian remains in Calabria; STEFANO, t. c. pp. 423 & 424.—Subfossil Molluscan Fauna from Bay of Messina; SCHAFFER (458).—Quaternary shells found with *Elephas antiquus* in Sicily; GREGORIO, Ann. Geol. Pal. no. 26, pp. 5 & 6.

Borneo:—Brackish-water deposits of the Mělawi; MARTIN (293).

Africa:—Land and freshwater Mollusca from Algeria; PALLARY, Bull. Soc. geol. France xxvii, p. 374.—Post-Pliocene Shells from Egypt with a n. sp. of *Unio*; NEWTON (353).

North America:—Pleistocene Shells from Milwaukee; BAKER (19).

2. Tertiary.

Cossmann (92) describes a few new species of *Gastropoda*.—Several new specific names; Dollfus, Rev. paleozool. iii, pp. 178 & 179.—*Pirula nodulifera* in North Kent; Johnson, Sci. Gossip v, p. 323.—New species of Mollusca from the Paris basin; Gregorio (177).—*Fusus heberti*, n. sp. from France; Mayer-Eymar (298).—Shells from Asprières (Aveyron); Thevenin, Bull. Soc. geol. France xxvii, pp. 353–359.—Notes on tertiary species from Touraine, with some new forms; Dollfus & Dautzenberg (139).—*Cephalopoda* from Piedmont, with n. spp.; Parona (378).—*Dreissensiidæ* of South of France, with n. spp.; Degrange-Touzin (129).—Fossils from Mérignac and Pessac; Neuville, Act. Soc. Bordeaux iii, p. 201.—*Corbis pugetensis*, n. sp. from Nice; Mayer-Eymar (298).—Lists of fossils from the Peugue valley and Eyquems; Degrange-Touzin (130).—Mollusca from Savoy, with n. spp. of *Trochus* and *Natica*; Douxami & Révil (141).—Eocene and Miocene Mollusca from the Central Appennines, with a n. sp. of *Pleurotomaria*; Morena (336).—List of Tertiary fossils from Marche; Luzi (278).—Tertiary fossils from Umbria; Bonarelli, Boll. Soc. geol. Ital. xviii, pp. 484–490.—*Orcagnia trivigiana*, n. g. n. sp. from the Venetian Priabona beds, Possagno, near Forniseta; Oppenheim (367).—On *Pecten aduncus* from Tuscany; Oppenheim (369).—Mollusca from N. Italy; Sacco (452).—List of Tortonian fossils from the Valley of the Idice; Sangiorgi (453).—Fossil Landshells from N. Italy; Ugolini (557).—*Pelecypoda* of Piedmont and Liguria continued; Sacco (449, 451).—*Helix* beds in Roumania with names of n. spp.; Teisseyre (543).—*Pecten denudatus* and *Pleuronectia comitatus* from Hungary identical with *Pseudamusium oblongum*; Böckh (35).—New species of lower tertiary fossils from Egypt; Mayer-Eymar (298).—Land and freshwater Mollusca from Algeria; Pallary, Bull. Soc. geol. France xxvii, pp. 374–376.—Tertiary (Eocene ?) shells from Borneo, with n. spp. of *Arca* and *Melania*; Martin (294).—Fossil *Gastropoda* from Java, with many n. spp.; Martin (295).—Neocene fossils from Vancouver, with n. spp.; Merriam (317).—North American *Leptonacea*; Dall (116).—New species of *Gastropoda* from Oligocene and Lower Miocene of Patagonia; Cossmann (94).—Shells from Patagonia, with several n. spp.; Ihering (224).—Mollusca from Peru, with many n. spp.; Grzybowski (512).—Revision of Australian fauna commenced, with n. spp.; Tate (539).—Fossils from Murray Desert, with n. spp.; Tate (535).

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†*Acanthoclymenia*, n. g., type *Clymenia neapolitana*, Clarke; HYATT in ZITTEL (595), p. 548.
†*Acanthopleuroceras*, nom. nov. for *Cycloceras*, Hyatt nec McCoy, type *Ammonites natrix*, Schloth.; HYATT in ZITTEL (595), p. 578.
†*Acrioceras*, n. g., type *Ancyloceras tabarelli*, Astier; HYATT in ZITTEL (595), p. 588.
†*Aetomoceras*, n. g., type *Ammonites scipionianus*, d'Orb.; HYATT in ZITTEL (595), p. 575.

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† This sign is prefixed to references relating to fossil forms.

†*Alocolytoceras*, n. g., type *Ammonites germainei*, d'Orb.; HYATT in ZITTEL (595), p. 572.
†*Amœboceras*, n. g., type *Ammonites alternans*, von Buch; HYATT in ZITTEL (595), p. 580.
†*Anagymnites*, n. g., type *Gymnites lamarcki*, Diener; HYATT in ZITTEL (595), p. 557.
†*Anahamulina*, n. g., type *Hamulina subcylindrica*, d'Orb.; HYATT in ZITTEL (595), p. 571.
†*Anahedenstræmia*, n. g., type *Hedenstræmia mojsisovicsi*, Diener; HYATT in ZITTEL (595), p. 555.
†*Anahoplites*, n. g., type *Ammonites splendens*, d'Orb.; HYATT in ZITTEL (595), p. 584.
†*Analytoceras*, n. g., type *Lytoceras articulatum*, Wähner; HYATT in ZITTEL (595), p. 568.
†*Anascaphites*, n. g., type *Scaphites ventricosus*, Meek; HYATT in ZITTEL (595), p. 572.
†*Ancolioceras*, n. g., type *A. substriatum*, n. sp.; BUCKMAN (60), p. xlvii.
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†*Anthracoceras*, n. subgen. of *Dimorphoceras*, for *D. discus*, n. sp.; FRECH (163), p. 285, fig.
†*Apedogyria*, n. g., type *A. patellaria*, n. sp.; BUCKMAN (60), p. lix.
†*Apleuroceras*, n. g., type *Ceratites sturi*, Mojs.; HYATT in ZITTEL (595), p. 556.
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†*Apsorroceras*, n. g., type *Hamites baculatus*, Quenst.; HYATT in ZITTEL (595), p. 584.
†*Arctoceras*, n. g., for *A. lindströmi*, n. sp., Trias, Bären island; BÖHM, Zeitschr. Deutsch. geol. Ges. li, p. 325.
†*Arctoceras*, n. g., type *Ceratites polaris*, Mojs.; HYATT in ZITTEL (595), p. 559.
†*Asthenoceras*, n. g., type *A. nannodes*, S. Buckman; BUCKMAN (60), p. xlix.
†*Bostrychoceras*, n. g., type *Heteroceras polyplocum*, Schlüt.; HYATT in ZITTEL (595), p. 588.
†*Calycoceras*, n. g., type *Ammonites navicularis*, Sharpe; HYATT in ZITTEL (595), p. 589.
†*Canavarites*, n. g., type *Ariet. discretum*, Canav.; HYATT in ZITTEL (595), p. 577.
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†*Cicatrites*, n. subgen. of *Lytoceras*, for *L. abichi*, n. sp. from the Cretaceous, Caucasus; ANTHULA, Beitr. Pal. Oesterr.-Ung. xii, p. 100.
†*Codoceras*, n. g., type *Cyrtoceras indomitum*, Barr.; HYATT in ZITTEL (595), p. 532.
†*Cosmoceras*; BRASIL, Bull. Soc. geol. Normand. xvii, 1896, pp. 41–48, figg.
†*Cosmogyria*, n. g., type *Ammonites murchisonæ obtusus*, Quenstedt; BUCKMAN (60), p. lii.
†*Cylicoceras*, n. g., type *C. undatum*, n. sp.; BUCKMAN (60), p. xlix.
†*Cypholioceras*, n. g., type *C. plicatum*, n. sp.; BUCKMAN (60), p. xliii.
†*Cyrtosiceras*, n. g., type *Ammonites macrotelus*, Oppel; HYATT in ZITTEL (595), p. 569.
†*Dasyceras*, n. g., type *Phylloceras rakosense*, Herbich; HYATT in ZITTEL (595), p. 567.
†*Diadochoceras*, n. g., type *Ammonites nodosocostatus*, d'Orb.; HYATT in ZITTEL (595), p. 587.
†*Diaplococeras*, n. g., type *Dinarites liccanus*, Mojs.; HYATT in ZITTEL (595), p. 556.

†*Diplacomoceras*, n. g., type *Ammonites bidorsatus*, Schüt.; HYATT in ZITTEL (595), p. 585.
†*Diplomoceras*, n. g., type *Hamites cylindraceus*, d'Orb.; HYATT in ZITTEL (595), p. 571.
†*Dipoloceras*, n. g., type *Ammonites cristatus*, d'Orb.; HYATT in ZITTEL (595), p. 589.
†*Dirrymoceras*, n. g., type *Ancyloceras simplex*, d'Orb.; HYATT in ZITTEL (595), p. 586.
†*Discophyllites*, n. g., type *Lytoceras patens*, Mojs.; HYATT in ZITTEL (595), p. 566.
†*Distoloceras*, n. g., type *Hoplites hystrix*, Neum. & Uhlig; HYATT in ZITTEL (595), p. 588.
†*Erymnoceras*, n. g., type *Ammonites coronatus*, Brug.; HYATT in ZITTEL (595), p. 580.
†*Florianites*, n. g., type *Celtites floriani*, Mojs.; HYATT in ZITTEL (595), p. 558.
†*Gabbioceras*, n. g., type *Ammonites batesi*, Gabb (Palæont. California ii, pls. 20, 21; nec *A. batesi*, id. i, pl. 13); HYATT in ZITTEL (595), p. 570.
†*Gemmellaroceras*, n. g., type *Aegoceras ænigmatum*, Gemm.; HYATT in ZITTEL (595), p. 574.
†*Geyeria*, n. g., type *G. fasciata*, n. sp.; BUCKMAN (60), p. l.
†*Geyeroceras*, n. g., type *Phylloceras cylindricum*, Geyer; HYATT in ZITTEL (595), p. 568.
†*Glochiceras*, n. g., type *Ammonites nimbatus*, Oppel; HYATT in ZITTEL (595), p. 569.
†*Goniolobocerass*, n. g., type *Goniatites goniolobus*, Meek; HYATT in ZITTEL (595), p. 551.
†*Hemibaculites*, n. g., type *Toxoceras obliquatum*, d'Orb.; HYATT in ZITTEL (595), p. 586.
†*Hoplites*, note on the genus; SARASIN (455).
†*Hyattia*, n. g., type *H. pustulifera*, n. sp.; BUCKMAN (60), p. lv.
†*Hyattina*, n. g., type *H. brasili*, n. sp.; BUCKMAN (60), p. lvii.
†*Hyphantoceras*, n. g., type *Heteroceras roissyanum*, Schlüt.; HYATT in ZITTEL (595), p. 587.
†*Hystatoceras*, n. g. (*Brancoceras*, Steinmann nec Hyatt), type *Ammonites senequieri*, d'Orb.; HYATT in ZITTEL (595), p. 590.
†*Hysteroceras*, n. g., type *Ammonites varicosus*, d'Orb.; HYATT in ZITTEL (595), p. 590.
†*Hystrichoceras*, n. g., *Ammonites coupei*, Brongt.; HYATT in ZITTEL (595), p. 589.
†*Iberites*, n. g., type *Hungarites pradoi*, Mojs.; HYATT in ZITTEL (595), p. 557.
†*Jahnnites*, n. g., type *Scaphites geinitzi*, var. *binodosus*, Jahn; HYATT in ZITTEL (595), p. 572.
†*Keyserlingites*, n. g., type *Ceratites subrobustus*, Mojs.; HYATT in ZITTEL (595), p. 559.
†*Kiliania*, n. g., type *K. laciniosa*, n. sp.; BUCKMAN (60), p. lxiv.
†*Libycoceras*, n. g., type *Sphenodiscus ismaëli*, Zittel; HYATT in ZITTEL (595), p. 585.
†*Lioceras*, Hyatt, on the genus; BUCKMAN (60).
†*Lithacoceras*, n. g., type *Ammonites ulmensis*, Oppel; HYATT in ZITTEL (595), p. 581.
†*Lopholobites*, n. g., type *Neolobites cotteauxi*, Nicklès; HYATT in ZITTEL (595), p. 590.
†*Ludwigina*, n. g., type *L. patula*, n. sp.; BUCKMAN (60), p. lxi.
†*Lyticoceras*, n. g., type *Ammonites cryptoceras*, d'Orb.; HYATT in ZITTEL (595), p. 586.
†*Lytoceras*, development of; SMITH (494).

†*Manselia*, n. g., type *M. subfalcata*, n. sp.; BUCKMAN (60), p. lviii.
†*Meneghiniceras*, n. g., type *Phylloceras lariense*, Menegh.; HYATT in ZITTEL (595), p. 568.
†*Metacanthoplites*, n. g., type *Ammonites rhotomagensis*, d'Orb.; HYATT in ZITTEL (595), p. 589.
†*Milleroceras*, n. g., type *Goniatites parrishi*, Mill. & G.; HYATT in ZITTEL (595), p. 550.
†*Neoicoceras*, n. g., type *Goniatites elkhornensis*, Mill. & G.; HYATT in ZITTEL (595), p. 550.
†*Noetlingites*, n. g., type *Hungarites strombecki*, Griepenk.; HYATT in ZITTEL (595), p. 557.
†*Olenikites*, n. g., type *Dinarites spiniplicatus*, Mojs.; HYATT in ZITTEL (595), p. 559.
†*Ostlingoceras*, n. g., type *Turrilites puzosianus*, d'Orb.; HYATT in ZITTEL (595), p. 587.
†*Oxybeloceras*, n. g., type *Ptychoceras crassum*, Whitf.; HYATT in ZITTEL (595), p. 588.
†*Palæogoniatites*, n. g., type *Goniatites lituum*, Barr.; HYATT in ZITTEL (595), p. 549.
†*Paraceratites*, n. g., type *Ceratites elegans*, Mojs.; HYATT in ZITTEL (595), p. 559.
†*Paragymnites*, n. g., type *Placites sakuntala*, Mojs.; HYATT in ZITTEL (595), p. 557.
†*Parahoplites*, n. g., with list of species; ANTHULA, Beitr. Pal. Oestert.-Ung. xii, p. 109.
†*Paralenticeras*, n. g., type *Amaltheus sieversi*, Gerhard; HYATT in ZITTEL (595), p. 590.
†*Parapachydiscus*, n. g., type *Ammonites gollevillensis*, d'Orb.; HYATT in ZITTEL (595), p. 570.
†*Paraphyllites*, n. g., type *Goniatites tabuloides*; HYATT in ZITTEL (595), p. 549.
†*Parapsiloceras*, n. g., type *Psiloceras calliphyllum*, var. *polycyclum*, Wähner; HYATT in ZITTEL (595), p. 574.
†*Parastephanites*, n. g., type *Achrochordiceras atavus*, Waagen; HYATT in ZITTEL (595), p. 558.
†*Paratornoceras*, n. g., type *Goniatites lentiformis*, Kayser; HYATT in ZITTEL (595), p. 551.
†*Peltoceras*, with *P. angustilobatum*, n. sp.; BRASIL, Bull. Soc. geol Normand. xvii, 1896, pp. 36-41, figg.
†*Phricodoceras*, n. g., type *Ammonites taylori*, d'Orb.; HYATT in ZITTEL (595), p. 587.
†*Phylloceras*, development of; SMITH (494).
†*Physodoceras*, n. g., type *Ammonites circumspinosus*, Oppel; HYATT in ZITTEL (595), p. 582.
†*Platylenticeras*, n. g., type *Oxynoticeras heteropleurum*, Neum. & Uhlig; HYATT in ZITTEL (595), p. 590.
†*Pleurolytoceras*, n. g., type *Ammonites hircinus*, Schloth.; HYATT in ZITTEL (595), p. 572.
†*Pleuropachydiscus*, n. g., type *Ammonites hoffmani*, Gabb; HYATT in ZITTEL (595), p. 571.
†*Plococeras*, n. g., type *Dinarites dalmatianus*, Mojs.; HYATT in ZITTEL (595), p. 556.
†*Protengonoceras*, n. g., type *Ammonites gabbi*, Hyatt (=*Ammonites pedernalis*, Gabb); HYATT in ZITTEL (595), p. 595.
†*Protetragonites*, n. g., type *Ammonites quadrisulcatus*, d'Orb.; HYATT in ZITTEL (595), p. 569.
†*Protophiceras*, n. g., type *Danubites nicolai*, Diener; HYATT in ZITTEL (595), p. 556.

†*Pseudoceltites*, n. g., type *Celtites multiplicatus*, Waagen; HYATT in ZITTEL (595), p. 558.
†*Pseudodanubites*, n. g., type *Danubites dritarshtra*, Diener; HYATT in ZITTEL (595), p. 557.
†*Pseudodinarites*, n. g., type *Dinarites mahommedanus*, Mojs.; HYATT in ZITTEL (595), p. 559.
†*Pseudohaploceras*, n. g., type *Haploceras liptoviense*, Uhlig; HYATT in ZITTEL (595), p. 570.
†*Pseudonomismoceras*, n. g. for *P. silesiacum*, Frech; FRECH (163), p. 285, fig.
†*Psilotissotia*, n. g., type *Pulchellia chalmasi*, Nicklès; HYATT in ZITTEL (595), p. 590.
†*Rhætites*, n. g., type *Arcestes rhæticus*, Clark; HYATT in ZITTEL (595), p. 565.
†*Schistophylloceras*, n. g., type *Phylloceras aulonotum*, Herbich; HYATT in ZITTEL (595), p. 568.
†*Siemiradzkia*, n. g., type *Ammonites bakeriæ*, d'Orb. (Pal. Franc. Terr. Jurass. pl. 149, f. 1, non pl. 148); HYATT in ZITTEL (595), p. 582.
†*Sigaloceras*, n. g., type *Ammonites calloviensis*, d'Orb.; HYATT in ZITTEL (595), p. 587.
†*Steueroceras*, n. n. for *Odontoceras*, Steuer, nec *Odontocera*, Serv.; COSSMANN, Rev. paleozool. iii, p. 45.
†*Streblites*, n. g., type *Ammonites pictus-costatus*, Quenst.: HYATT in ZITTEL (595), p. 569.
†*Strenoceras*, n. g., type *Ammonites niortensis*, d'Orb.; HYATT in ZITTEL (595), p. 583.
†*Strophogyria*, n. g., type *S. cosmia*, n. sp.; BUCKMAN (60), p. lxii.
†*Thurmannia*, n. g., type *Ammonites thurmanni*, Pict. & Camp.; HYATT in ZITTEL (595), p. 585.
†*Tonoceras*, n. g., type *Ancyloceras duvalianum*, d'Orb.; HYATT in ZITTEL (595), p. 587.
†*Torneutoceras*, n. g., type *Hamites attenuatus*, d'Orb.; HYATT in ZITTEL (595), p. 586.
†*Tragophylloceras*, n. g., type *Ammonites heterophyllus-numismalis*, Quenst.; HYATT in ZITTEL (595), p. 568.
†*Ussurites*, n. g., type *Monophyllites sichoticus*, Diener; HYATT in ZITTEL (595), p. 566.
† *Welschia*, n. g., type *W. obtusiformis*, n. sp.; BUCKMAN (60), p. li.
† *Wyomingites*, n. g., type *Meekoceras aplanatum*, White; HYATT in ZITTEL (595), p. 556.

TETRABRANCHIATA.

†*Anoploceras*, n. g., type *Pleuronautilus ampezzanus*, Mojs.; HYATT in ZITTEL (595), p. 525.
†*Bathmoceras*, on the shell of; HOLM (219).
†*Clymenonautilus*, n. g., type *Nautilus ehrlichi*, Mojs.; HYATT in ZITTEL (595), p. 521.
†*Cyclostomiceras*, n. g., type *Poterioceras cassinense*, Whitf.; HYATT in ZITTEL (595), p. 530.
†*Cyrtactinoceras*, n. g., type *Cyrtoceras rebelle*, Barr.; HYATT in ZITTEL (595), p. 528.
†*Cyrtorizoceras*, n. g., type *Cyrtoceras minneapolis*, Clarke; HYATT in ZITTEL (595), p. 529.
†*Diodoceras*, n. g., type *Endolobus avonensis*, Dawson; HYATT in ZITTEL (595), p. 526.
†*Encoiloceras*, n. g., type *Pleuronautilus superbus*, Mojs.; HYATT in ZITTEL (595), p. 525.

†*Enoploceras*, n. g., type *Nautilus wulfeni*, Mojs.; HYATT in ZITTEL (595), p. 525.
†*Eremoceras*, n. g., type *Cyrtoceras syphax*, Bill.; HYATT in ZITTEL (595), p. 530.
†*Gigantoceras*, n. g., type *Gyroceras inelegans*, Meek; HYATT in ZITTEL (595), p. 527.
†*Hemiphragmoceras*, n. g., type *Phragmoceras pusillum*, Barr.; HYATT in ZITTEL (595), p. 531.
†*Mixosiphonoceras*, n. g., type *Cyrtoceras desolatum*, Barr.; HYATT in ZITTEL (595), p. 529.
Nautilus pompilius, tentacles of; GRIFFIN (181).
†*Octameroceras*, n. g., type *Phragmoceras callistoma*, Barr.; HYATT in ZITTEL (595), p. 531.
†*Paractinoceras*, n. subgen. of *Actinoceras*, Bronn, type *Sactoceras canadense*, Whiteaves; HYATT in ZITTEL (595), p. 528.
†*Projovellania*, n. g., type *Cyrtoceras athleta*, Barr.; HYATT in ZITTEL (595), p. 529.
†*Protobactrites*, n. g., type *Orthoceras styloideum*, Barr.; HYATT in ZITTEL (595), p. 518.
†*Protocycloceras*, n. g., type *Orthoceras lamarcki*, Bill.; HYATT in ZITTEL (595), p. 518.
†*Protophragmoceras*, n. g., type *Cyrtoceras murchisoni*, Barr.; HYATT in ZITTEL (595), p. 532.

II. GASTROPODA.

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Ennea somaliensis, Somaliland; SMITH, J. Malac. vii, p. 58, fig.: *E. microthauma*, p. 194, *juxtidens*, p. 195, S. Africa; MELVILL & PONSONBY, Ann. Nat. Hist. iv, figg.: *E. nyangweensis*, *albida*, Congo Free State; PUTZEYS, Ann. Soc. malac. Belgique xxxiv, Bull. p. lvi, figg.: *E. turricula*, S. India, *brevicollis*, Moulmein, p. 768, *nagaensis*, Naga Hills, p. 769; BLANFORD, P. Zool. Soc. London 1899, figg.: *E. perspicuæformis*, p. 553, *transiens*, p. 555, *differens*, *separata*, p. 556, *ingens*, p. 559, *sejuncta*, *instabilis*, *ampullacea*, p. 560, *multidentata*, *durbanensis*, p. 561, *perissodonta*, p. 562, *isipingoensis*, p. 563, *leppani*, *arnoldi*, p. 564, *pentheri*, p. 566, S. Africa; STURANY, Denk. Ak. Wien lxvii, figg.: *E. iwakawa*, Japan; PILSBRY, P. Ac. Philad. 1899, p. 525, fig.: *E.* (*Gulella*) *vicina*, p. 580, *varians*, p. 581, British Central Africa; SMITH, P. Zool. Soc. London 1899, figg.: n. spp.
Glandina truncata, n. var.; PILSBRY, P. Ac. Philad. 1899, p. 404.
Glandina rhoadsi, p. 395, *dalli*, p. 396, *michoanensis*, p. 397, Mexico; PILSBRY, t. c.: n. spp.

Paryphanta louisiadarum, Louisiades; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 89: n. sp.
Pseudosubulina texoloensis, Mexico; PILSBRY, P. Ac. Philad. 1899, p. 398: n. sp.
Salasiella pfeifferi, n. n. for *Achatina pulchella*, Pfr. nec Spix; PILSBRY, P. Ac. Philad. 1899, p. 398.
Streptaxis nautileus, p. 220, *celebicus*, p. 221, Celebes; SARASIN (456), figg.: *S. politus*, Brazil, *elongatus*, hab. unknown; FULTON, P. Malac. Soc. London iii, p. 302, figg.: *S. planus*, S. Celebes; FULTON, t. c. p. 214, fig.: *S. micans*, *nseudweensis*, Congo Free State; PUTZEYS, Ann. Soc. malac. Belgique xxxiv, Bull. p. lv, figg.: *S. johnstoni*, British Central Africa; SMITH, P. Zool. Soc. London 1899, p. 581, fig.: *S. lævis*, Tenasserim, Burma, *beddomii* (Nevill MS.), p. 765, *scalptus*, S. India, p. 766, *subacutus*, South Canara, p. 767, *ravanæ*, Ceylon, p. 768; BLANFORD, P. Zool. Soc. London 1899, figg.: n. spp.
Streptostyla novoleonis, Mexico; PILSBRY, P. Ac. Philad. 1899, p. 397: n. sp.

LIMACIDÆ, ZONITIDÆ, and PHILOMYCIDÆ.

Monographs of *Zonites* and *Retinella*; KOBELT in MARTINI & CHEMNITZ (296).
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Bensonia (Oxytes) laotica, Laos; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 165: n. sp.
Conulus, note on American species, with n. varr. of *C. fulvus* and *C. chersinus*; PILSBRY, Nautilus xii, p. 113.
Conulus coroicanus, Bolivia; ANCEY, Nautilus xiii, p. 17: n. sp.
Euplecta binoyaensis, Ceylon; GODWIN-AUSTEN (171), p. 103, fig.: n. sp.
Eurychlamys, n. subgen. of *Macrochlamys*, for *M. platychlamys* and *M. regulata*; GODWIN AUSTEN, P. Malac. Soc. London iii, p. 250 [also in (171), p. 90].
Gastrodonta cœlaxis, North Carolina; PILSBRY, Nautilus xii, p. 140: n. sp.
Girasia shanensis, Shan Hills; GODWIN-AUSTEN (171), p. 107, fig.: n. sp.
Haughtonia, n. subgen. of *Ariophanta*, for *Helix conferta*, Pfr.; GODWIN-AUSTEN (171), p. 120.
Helicarion, Philippine species; MOELLENDORFF, in SEMPER'S 'Reisen im Arch. Philippinen. Wiss. Result.' viii, pp. 60–70, figg.
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Hemiplecta adolescens, Sumbawa; SMITH, Ann. Nat. Hist. iii, p. 410: *H. floweri*, Perak; SMITH, P. Malac. Soc. London iii, p. 284, fig.: *H. strubelli*, New Guinea; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 90: *H. rollei*, Dutch New Guinea; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 157: n. spp.
Hyalinia, genitalia and radula; MOSS (337).
Hyalinia planorbis, Montenegro; MOELLENDORFF, Nachrbl. Deutsch. malak.

Ges. 1899, p. 169: *H. hiulciformis*, Castro, p. 11, *achyophila*, Brgt. p. 15, *molleriana*, Castro, p. 16, *lusitanica*, Castro, *rouvieri*, Hagenmuller, p. 17, *lauta*, Castro, p. 23, *alliariformis*, Castro, p. 25, *basilica*, Castro, p. 26, *castroi*, p. 27, *nitidiformis*, Castro, p. 29, *callarabdota*, Castro, p. 30, *elegans*, p. 32, *arnouldi*, Castro, p. 33, Portugal; LOCARD, Arch. Mus. Lyon vii, No. 1 : n. spp.

Kaliella colletti, Ceylon; SYKES, J. Malac. vii, p. 30, fig.: *K. lamprocystis*, *euconus*, West China; MOELLENDORFF, Annuaire Mus. St Petersb. 1899, p. 54, figg. : n. spp.

Khasiella, n. subgen. of *Macrochlamys* for *Euplecta vidua*, Blfd.; GODWIN-AUSTEN (171), p. 129.

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Leptodontarion, n. subgen. of *Helicarion* for *H. albacuminatus*, n. sp., and others; SARASIN (456), p. 124.

Limacella lactiformis, Blainville = *Philomycus carolinensis*; PILSBRY & COCKERELL, Nautilus xiii, p. 24.

Limax marginatus, n. var.; SCHARFF & CARPENTER (459), p. 214.

Macroceras, Philippine species; MOELLENDORFF, in SEMPER'S 'Reisen im Arch. Philippinen. Wiss. Result.' viii, pp. 84 & 85.

Macrochlamys, Philippine species; MOELLENDORFF, in SEMPER'S 'Reisen im Arch. Philippinen. Wiss. Result.' viii, pp. 70–83, figg.

Macrochlamys amdoana, p. 50, *cathaiana*, p. 52, West China; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, figg.: *M. udus*, Assam; GODWIN-AUSTEN (171), p. 136, fig.: *M. pseudosuccinea*, Damma I.; SMITH, Ann. Nat. Hist. xiv [1894], p. 60: *M. dammeriana*, Damma I.; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 155 : n. spp.

Mariella, note on genus; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 20: *M. dussumieri*, note on; BLANFORD, P. Malac. Soc. London iii, p. 280.

Martensia consociata, British Central Africa; SMITH, P. Zool. Soc. London 1899, p. 584, fig.: n. sp.

Medyla insculpta, Pfr., its anatomy; SUTER (525).

Mesolimax escherichi, p. 36, (*Toxolimax*, n. subgen.) *hoplites*, p. 37, Asia Minor; SIMROTH, SB. Ges. Leipzig 1897–1898: n. spp.

Microcystis sericans, Hawaii; ANCEY, P. Malac. Soc. London iii, p. 268, fig.: *M.* (?) *ambæ*, Ceylon; GODWIN-AUSTEN (171), p. 111, fig. : n. spp.

Microparmarion austeni, anatomy; COLLINGE (80).

Microparmarion javanica, Java; COLLINGE, Ann. Nat. Hist. iv, p. 400, fig.: n. sp.

Nanina (*Hemiplecta*) *rugata*, p. 165, *semisculpta*, p. 167, new varieties; SARASIN (456).

Nanina dammaensis, Damma I.; SMITH, Ann. Nat. Hist. xiv [1894], p. 60: *N.* (*Hemiplecta*) *patens*, Java; MARTENS, Arch. Naturg. lxv, p. 27, fig.: *N.* (*Medyla*) *lenticula*, p. 134, (*M.*) *ombrophila*, p. 135, (*M.*) *alsophila*, p. 136, (*M.*) *hygrophila*, p. 137, (*Xesta*) *porcellanica*, p. 143, (*X.*) *semilactea*, p. 144, (*X.*) *ardens*, p. 148, (*X.*) *fennemæ*, p. 158, (*Hemiplecta*) *weberi*, p. 161, (*H.*) *wichmanni*, p. 162, (*H.*) *totojensis*, p. 166, (*H.*) *braam-morrisi*, p. 167, Celebes; SARASIN (456), figg. : n. spp.

Omphalina montereyensis, Mexico; PILSBRY, P. Ac. Philad. 1899, p. 395: n. sp.

Otesia, and subgenera, Philippine species; MOELLENDORFF in SEMPER'S 'Reisen im Arch. Philippinen. Wiss. Result.' viii, pp. 85–98, figg.

Otesia cirrhotropis, Damma I.; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 156: *O. mecongana*, Laos; MOELLENDORFF, t. c. p. 165: n. spp.

Parmarion pupillaris, anatomy; COLLINGE (80).

Parmunculus, n. gen. for *Tennentia philippinensis*, Semper; COLLINGE, in SEMPER'S 'Reisen im Arch. Philippinen, Wiss. Result.' viii, p. 57, fig.
Paryphanta, note on animal and habits; SUTER, J. Malac. vii, p. 49.
Paryphanta edwardi, New Zealand; SUTER, P. Malac. Soc. London iii, p. 290, fig.: n. sp.
Phenacohelicidæ, classification of; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 22.
Philippinella, n. g. for *Tennentia philippinensis*, Semper, and others; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 21.
Philippinella moellendorffi, Philippines; COLLINGE in SEMPER'S 'Reisen im Arch. Philippinen, Wiss. Result.' viii, p. 56, fig.: n. sp.
Philomycus, note on mimicry; SIMROTH (474).
Philomycus tarmes, Celebes; SARASIN (456), p. 207, fig.: n. sp.
Pliotropis, n. subgen. of *Otesia* for *O. biangulata*, Pfr.; MOELLENDORFF (319), p. 91.
Pristiloma, notes on known species; PILSBRY (401).
Pristiloma pilsbryi, Oregon; VANATTA, P. Ac. Philad. 1899, p. 120, fig.: *P. taylori*, Vancouver; PILSBRY, t. c. p. 185, fig. : n. spp.
Ratnadvipia, n. subgen. of *Zonitidæ* for *Helicarion irradians*, Bens.; GODWIN-AUSTEN, P. Malac. Soc. London iii, p. 253 [also in (171), p. 93].
Rhysota peramæna, Flores; SMITH, Ann. Nat. Hist. iii, p. 409: n. sp.
Rhytida, note on animal and habits; SUTER, J. Malac. vii, p. 49.
Sitala celebica, Celebes; SARASIN (456), p. 131, fig.: n. sp.
Tebennophorus, note on genus with anatomy; COLLINGE, J. Malac. vii, p. 80.
Thapsia mixta, p. 582, *insimulans*, *masukuensis*, *simulata*, p. 583, *nyikana*, *decepta*, p. 584, British Central Africa; SMITH, P. Zool. Soc. London 1899, figg. : n. spp.
Toxolimax, n. subgen. of *Mesolimax* for *M. hoplites*, n. sp.; SIMROTH, SB. Ges. Leipzig 1897–1898, p. 37.
Trochomorpha placenta, S. Africa; MELVILL & PONSONBY, Ann. Nat. Hist. iv, p. 197, fig.: *T.* (*Videna*) *minahassæ*, (*Nigritella*) *robusta*, Celebes; SARASIN (456), p. 175, figg. : n. spp.
Trochozonites sharpei, British Central Africa; SMITH, P. Zool. Soc. London 1899, p. 585, fig.: n. sp.
Vitrea prodigiosa, Algeria; ANCEY, J. Conchyl. xlvii, p. 413, fig.: *V. rhoadsi*, several locs. in U.S.A.; PILSBRY, Nautilus xii, p. 101 : n. spp.
Vitrinoconus marosianus, *applanatus*, p. 170, *pileolus*, p. 171, Celebes; SARASIN (456), figg. : n. spp.
Xesta carinocincta, Flores; SMITH, Ann. Nat. Hist. iii, p. 410: n. sp.
Xestina (?) *chrysorhaphe*, Sytshuan; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, p. 53, fig.: n. sp.
Zingis johnstoni, British Central Africa; SMITH, P. Zool. Soc. London 1899, p. 584, fig.: *Z. haygarthi*, *inuncta*, p. 195, *ampliata*, p. 196, S. Africa; MELVILL & PONSONBY, Ann. Nat. Hist. iv, figg. : n. spp.
Zonites, notes on several species with n. var. of *Z. verticillus*; KIMAKOWICZ, Nachrbl. Deutsch. malak. Ges. 1899, p. 65: *Z. compressus*, n. var.; KOBELT in MARTINI & CHEMNITZ (296), p. 892.
Zonites sarajevoensis, p. 67, *tenerrimus* (Brancs. MS.), p. 72, Bosnia; KIMAKOWICZ, Nachrbl. Deutsch. malak. Ges. 1899 : n. spp.
Zonitoides nummus, Texas; VANATTA, P. Ac. Philad. 1899, p. 524, fig.: n. sp.

ARIONIDÆ.

Anadenus sechuenensis, Sechuen; COLLINGE, J. Malac. vii, p. 78, fig.: *A. sinensis*, Sytshuan; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, p. 49 : n. spp.
Arion aggericola, Mabille, note on; COLLINGE, J. Conchyl. xlvii, p. 151.

ENDODONTIDÆ.

Charopa rotumana, Smith, is a synonym of *Endodonta modicella*, Fér.; HEDLEY, Mem. Austral. Mus. iii, p. 488.

Endodonta (*Charopa*) *egesta*, Gray, note on animal; SUTER, J. Malac. vii, p. 52: *E. timandra*, Hutton, is a synonym of *E. tau*, Pfr., but *E. mutabilis*, Suter, is distinct; MURDOCH (340).

Endodonta celebica, Celebes; SARASIN (356), p. 175, fig.: *E.* (*Ptychodon*) *ureweraensis*, New Zealand; SUTER, J. Malac. vii, p. 53, fig.: *E.* (*Charopa*) *otagoensis*, (*C.*) *subinfecta*, New Zealand; SUTER, P. Malac. Soc. London iii, p. 286, figg.: *E.* (*Thaumatodon*) *nuda*, Hawaii; ANCEY, t. c. p. 268, fig.: *E. aculeata*, p. 151, New South Wales, *norfolkensis*, p. 152, Norfolk Island; HEDLEY, Rec. Austral. Mus. iii, figg.: n. spp.

Flammulina pilula and *F. lucetta*, their anatomy; MURDOCH (340): *F.* (*Phacussa*) *fulminata*, new variety; SUTER, P. Malac. Soc. London iii, p. 288, fig.

Flammulina pulleinei, S. Australia; TATE, Tr. R. Soc. S. Austral. xxiii, p. 247, fig.: *F.* (*Pyrrha*) *virescens*, p. 287, (*Phacussa*) *henryi*, p. 289, New Zealand; SUTER, P. Malac. Soc. London iii, figg.: n. spp.

Patula potanini, Gansu; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, p. 55, fig.: n. sp.

Phasis (*Trachycystis*) *fusco-cornea*, *fusco-olivacea*, British Central Africa; SMITH, P. Zool. Soc. London 1899, p. 585, figg.: n. spp.

Pterodiscus petasus, Oahu; ANCEY, P. Malac. Soc. London iii, p. 268, fig.: n. sp.

Pyramidula alternata, notes on varieties; CLAPP, Nautilus xiii, p. 41.

Stephanoda iheringi, Brazil, *latastei*, Chili; ANCEY, Nautilus xiii, p. 17: n. spp.

Trachycystis lygæa, Melv. & Pons., anatomy; MOSS & WEBB (339).

Trachycystis calorama, p. 196, *pycnotricha*, *ectima*, p. 197, S. Africa; MELVILL & PONSONBY, Ann. Nat. Hist. iv, figg.: n. spp.

HELICIDÆ.

Armature of Helicoid landshells; GUDE (187).

Ægista megachila, p. 68, *tenerrima*, p. 69, West China; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, figg.: n. spp.

Angasella polypleura, S. Australia; TATE, Tr. R. Soc. S. Austral. xxiii, p. 246, fig.: n. sp.

Ashmunella, n. gen. of *Helicidæ*, for *P. miorhyssa*, Dall; PILSBRY & COCKERELL, Nautilus xii, p. 107: Review of genus, with anatomy; PILSBRY & COCKERELL (412): *A. thomsoniana*, n. var.; PILSBRY & COCKERELL, Nautilus xiv, p. 49: *A. pseudodonta*, n. subsp.; COCKERELL, op. cit. xii, p. 131.

Camæna rugata, Sytshuan; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, p. 55, fig.: n. sp.

Cathaica cardiostoma, *transitans*, p. 105, *corrugata*, p. 108, *janulus*, p. 109, *rossimontana*, p. 110, *gansuica* (Schalf. MS.), p. 112, *nodulifera*, p. 113, *nanschanensis*, *cucunarica*, p. 115, *iacosta*, p. 116, *octhephiloides* (Schalf. MS.), p. 117, *connectens*, West China, *cunlunensis*, p. 123, Thibet, *polystigma*, p. 124, West China; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, figg.: n. spp.

Chersæcia, n. sect. of *Plectopylis*, type *P. leiophis*, Bens.; GUDE, Sci. Gossip vi, p. 149.

Chloritis dammaensis, Damma I.; SMITH, Ann. Nat. Hist. xiv [1894], p. 62: *C. minahassæ*, Celebes; SARASIN (456), p. 199, fig.: *C. subcarinata*, Damma I.; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges.

1899, p. 156: *C.* (*Trichochloritis*) *conjecta*, Sumba; SMITH, Ann. Nat. Hist. iii, p. 410: *C. mima*, p. 214, *selenitoides*, p. 215, Buru I.; FULTON, P. Malac. Soc. London iii, figg. : n. spp.

Cœlorus, n. subgen. of *Eulota*, type *E. cavicollis*, n. sp.; PILSBRY, P. Ac. Philad. 1899, p. 528.

Dendrotrochus mentum, New Britain; HEDLEY, Rec. Austral. Mus. iii, p. 153, fig.: n. sp.

Dorcasia globulus, Müll., anatomy; MOSS & WEBB (339).

Endoplon, n. sect. of *Plectopylis*, type *P. brachyplecta*, Bens.; GUDE, Sci. Gossip vi, p. 149.

Endothyra, n. sect. of *Plectopylis*, type *P. plectostoma*, Bens.; GUDE, t. c. p. 148.

Enteroplax, n. sect. of *Plectopylis*, type *P. quadrasi*, Mlldff.; GUDE, t. c. p. 149.

Epiphragmophora fidelis, Gray, variation of; RANDOLPH, Nautilus xiii, p. 25.

Epiphragmophora andivaga, Peru, *turtoni*, Bolivia (?); ANCEY, t. c. p. 18 : n. spp.

Eremia zitteli, Libyan Desert; BOETTGER, Nachrbl. Deutsch. malak. Ges. 1899, p. 159: n. sp.

Euhadra cyclolabris, *carphochroa*, p. 80, *stictotænia*, p. 81, *pseudocampylæa*, *strauchiana* (Schalf. MS.), p. 82, *amphidroma*, p. 83, *tenuitesta*, *haplozona*, p. 84, *eris*, p. 85, *micromphala*, p. 86, West China; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, figg. : n. spp.

Eulota (*Acusta*) *gainesi*, n. n. for *Helix læta*, Gould nec Pfr.; PILSBRY, P. Ac. Philad. 1899, p. 526.

Eulota subcornea, Damma I.; SMITH, Ann. Nat. Hist. xiv [1894], p. 61: *E. schanorum*, Shan States; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 166: *E. acustina*, p. 69, *duplocingula* (Schalf. MS.), p. 71, (*Eulotella*) *pœcila*, p. 78, (*E.*) *diplodesma*, p. 79, West China; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, figg.: *E. luna*, p. 526, (*Ægista*) *aperta*, (*Cœlorus*, n. subgen.) *cavicollis*, p. 527, *rudis*, p. 528, Japan; PILSBRY, P. Ac. Philad. 1899, figg. : n. spp.

Ganesella satsuma, p. 528, *ferruginea*, *heteroglypta*, p. 529, Japan; PILSBRY, P. Ac. Philad. 1899, figg. : n. spp.

Glyptorhagada euglypta, S. Australia; TATE, Tr. R. Soc. S. Austral. xxiii, p. 245, fig.: n. sp.

Helicidæ, radula of several species; SARASIN (456): *H. pomatia*, review of monstrosities and variation of; BUCHNER (59): *H. nemoralis* and *hortensis*, note on banding; JACQUART, Echange xv, pp. 1 & 2: *H. aspersa* and *vermiculata*, monstrosities; SOWERBY, Sci. Gossip vi, p. 181, fig.: *H. aspersa*, variety of; CARRINGTON, Sci. Gossip vi, p. 181; ANON., t. c. p. 223: *H. virgata*, variation of; SWANTON, Natural. J. 1899, pp. 1 E & 2 E: *H. arbustorum*; IDEM, t. c. pp. 5 & 6: *H.* (*Epiphragmophora*) *kelletti*, note on; WILLIAMSON, J. Malac. vii, p. 87: *H. lowei*, a second recent specimen; NORMAN, Ann. Nat. Hist. iii, p. 79: *H. insculpta*, Pfr., is a *Medyla*; SUTER, P. Malac. Soc. London iii, p. 330: *H. acuta*, sinistral; TAYLOR, J. Conch. ix, p. 211: *H. humboldtiana*, anatomy; FISCHER, J. Conchyl. xlvii, p. 297.

Helix (*Papuina*) *piliscus*, (*Albersia*) *obiensis*, Obi Island; MARTENS, Arch. Naturg. lxv, p. 28, figg.: *H.* (*Pomatia*) *salomonica*, Persia; NAEGELE, Nachrbl. Deutsch. malak. Ges. 1899, p. 28: *H.* (*Chloritis*) *lambineti*, p. 28, (*Obba*) *langsonensis*, p. 29, (*Möllendorffia*) *spurca*, p. 31, (*M.*) *messageri*, p. 23, (*M.*) *callitricha*, p. 35, (*Geotrochus*) *vatheleti*, p. 36, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlvii, figg.: *H. barbozana*, p. 50, *bocagei*, p. 51, *machadoi*, p. 52, *subrufa*, p. 64, *atachypora*, Brgt., p. 69, *despicta*, p. 78, *sublusitanica*, Castro, p. 81, *defectiva*, p. 85, *micida*, p. 86, *scabiosula*, p. 87, *portionalis*, *labiosa*, p. 88,

subpsaropsis, p. 92, *callizona*, Fagot, p. 93, *putilla*, p. 97, *ofellata*, p. 98, *protumida*, p. 99, *omnivaga*, p. 100, *salebrosa*, p. 101, *superflexa*, p. 102, *terrosa*, *limatula*, p. 103, *evula*, Brgt. MS. p. 109, *absidata*, p. 112, *expedenda*, *imula*, p. 113, *bipartita*, p. 122, *euglypha*, p. 123, *uberta*, p. 125, *spleniata*, p. 126, *finitimus*, p. 127, *utriculina*, p. 128, *lutulenta*, p. 131, Portugal; LOCARD, Arch. Mus. Lyon vii, No. 1 : n. spp.

Isomeria subcastanea, Pfr., anatomy; MOSS & WEBB (339).

Lævocathaica, n. gen., type *Helix christinæ*, H. Adams; MOELLENDORFF, Annuaire Mus. Zool. St. Petersb. 1899, p. 86.

Lævocathaica stenochone, p. 91, *amdoana*, p. 92, *distinguenda*, p. 93, *tropidorhaphe*, *prionotropis*, p. 94, *leucorhaphe*, p. 95, *phæomphala*, *potanini* (Schalf. MS.), p. 96, *odontophora*, p. 97, *pewzowi* (Schalf. MS.), *polytyla* (Schalf. MS.), p. 98, *dityla* (Schalf. MS.), p. 99, West China; MOELLENDORFF, t. c. figg. : n. spp.

Leucochroa, monograph commenced; KOBELT in MARTINI & CHEMNITZ (296).

Lysinoe, note on genus; FISCHER, J. Conchyl. xlvii, p. 297.

Obba listeri, *papilla*, new varieties; SARASIN (456).

Papuina hindei, Cox, anatomy; HEDLEY, Rec. Austral. Mus. iii, p. 154: *P. wiegmanni*, Mts., has priority over *P. tuomensis*, Ancey; GUDE, J. Malac. vii, p. 88.

Papuina mayana, Queensland; HEDLEY, Rec. Austral. Mus. iii, p. 151, fig.: *P. leucoraphe*, New Guinea; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 90: *P. chilochroa*, British New Guinea; DA COSTA, P. Malac. Soc. London iii, p. 306, fig. : n. spp.

Planispira zodiacus, *bulbulus*, new varieties; SARASIN (456).

Planispira (*Cristigibba*) *buruensis*, Buru; PONSONBY & SYKES, P. Malac. Soc. London iii, p. 307, fig.: *P. adonarana*, Adonara I.; FULTON, t. c. p. 215, fig.: *P. albodentata*, Flores; SMITH, Ann. Nat. Hist. iii, p. 411 : n. spp.

Platybostryx appears to be identical with *Xenothauma*; CROSSE (108).

Platypetasus castanopsis, p. 128, *trochomorpha*, *causius* (Schalf. MS.), p. 129, *encaustochilus* (Schalf. MS.), p. 130, *strophostoma*, p. 131, West China; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, figg. : n. spp.

Plectopylis, review of, completed, with new sections and new vars. of *P. achatina*; GUDE (187): Diagnoses of new forms reprinted; GUDE (188): Note on some specimens; GUDE, J. Malac. vii, p. 91.

Plectopylis françoisi, Tonkin; FISCHER, J. Conchyl. xlvi, p. 214, fig.: *P. sowerbyi*, Assam, p. 239, *congesta*, Tonkin, p. 332; GUDE, Sci. Gossip v, figg.: *P. austeni*, Assam, p. 15, *woodthorpei*, Burmah, p. 16; GUDE, op. cit. vi, figg. : n. spp.

Plectotropis stenomphala, Damma I.; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 157: *P. pentagonostoma*, *diploblepharis*, p. 63, *pseudopatula*, p. 65, West China; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, figg. : n. spp.

Polygyra richardsoni, n. var.; PILSBRY, Nautilus xii, p. 144: *P. postelliana*, n. var.; PILSBRY, t. c. p. 141: *P. monodon*, n. var.; PILSBRY, op. cit. xiii, p. 36: *P. appressa*, variety of; CHADWICK, t. c. p. 54.

Polygyra rhoadsi, p. 392, *suprazonata*, p. 393, Mexico; PILSBRY, P. Ac. Philad. 1899: *P. binneyana*, p. 38, Arkansas, *neglecta*, p. 40, Missouri, Kansas, and Arkansas; PILSBRY, Nautilus xiii : n. spp.

Praticolella strebeliana, Mexico; PILSBRY, P. Ac. Philad. 1899, p. 394 : n. sp.

Priodontura, n. n. for *Odontura*, Fischer & Crosse nec Rambur; FISCHER, J. Conchyl. xlvii, p. 304.

Pupisoma americanum, Ecuador; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 91: n. sp.

Satsuma millepunctata, West China; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, p. 58, fig.: n. sp.
Sinicola, n. sect. of *Plectopylis*, type *P. fimbriosa*, Mts.; GUDE, Sci. Gossip vi, p. 149.
Stilpnodiscus, n. gen., type *S. vernicinus*, n. sp.; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, p. 65.
Stilpnodiscus vernicinus (Schalf. MS.), *scassianus* (Schalf. MS.), p. 66, *entochilus*, p. 67, West China; MOELLENDORFF, t. c. figg. : n. spp.
Thersites pachystyla, new var.; COX (101).
Thersites webbi, ? Queensland; PILSBRY, P. Ac. Philad. 1899, p. 473, fig.: n. sp.
Thysanophora proxima, Mexico; PILSBRY, P. Ac. Philad. 1899, p. 394: n. sp.
Tropidocochlis, n. gen. for *Helix turriplana*, Morel., and *H. setubalensis*, Pfr.; LOCARD, Arch. Mus. Lyon vii, No. 1, p. 132.
Xenothauma appears to be identical with *Platybostryx*; CROSSE (108).

ORTHALICIDÆ and BULIMULIDÆ.

Amphibulima browni, Dominica; PILSBRY in TRYON (551), p. 239, fig.: n. sp.
Amphidromus contrarius, n. var.; FULTON, P. Malac. Soc. London iii, p. 215, fig.: *A. perversus*, n. var.; SARASIN (456).
Amphidromus oscitans, Alor Island; MARTENS, Arch. Naturg. lxv, p. 29, fig.: *A. dautzenbergi*, Tonkin; FULTON, P. Malac. Soc. London iii, p. 303, fig.: *A. kruijti*, Celebes; SARASIN (456), p. 213, fig.: n. spp.
Bulimulidæ, monograph continued by PILSBRY in TRYON (551).
Bulimulopsis, n. n. for *Eudioptus*, Albers, nec *Eudioptis*, Hübner; PILSBRY in TRYON (551), p. 220.
Drymæus virginalis, p. 12, *multifasciatus*, p. 14, *vincentinus*, p. 17, *onager*, p. 95, new varieties; PILSBRY in TRYON (551).
Drymæus sallei, Haiti; PILSBRY in TRYON (551), p. 11, fig.: n. sp.
Gæotis malleata, Porto Rico; PILSBRY in TRYON (551), p. 230, fig.: n. sp.
Metorthalicus, n. subgen. of *Orthalicus* for *O. fraseri*, Pfr., and others; PILSBRY in TRYON (551), p. 192.
Oxystyla undata, p. 105, *princeps*, p. 113, *pulchella*, p. 135, *maracaibensis*, p. 137, new varieties; PILSBRY in TRYON (551).
Pachychilus pilsbryi, n. n. for *P. rovirosai*, Pilsbry; MARTENS, Biol. Centr.-Amer. p. 463.
Petræus socialis, *schoukraensis*, Arabia; JOUSSEAUME, Naturaliste 1899, p. 8: *P. amboulíensis*, Djibouti; JOUSSEAUME, t. c. p. 91 : n. spp.
Placostylus bovinus, its anatomy; MURDOCH (340).
Rhodea, notes on genus with *R. æquatoria*, p. 304, n. sp., Ecuador, *crosseana*, p. 305, n. sp., U. S. of Colombia; DA COSTA, P. Malac. Soc. London iii, figg.
Simpulopsis tryoni, Brazil; PILSBRY in TRYON (551), p. 218, fig.: n. sp.

BULIMINIDÆ and PUPIDÆ.

Balea africana, S. Africa; MELVILL & PONSONBY, Ann. Nat. Hist. iii, p. 198: n. sp.
Bifidaria hordeacella, n. var.; STERKI, Nautilus xii, p. 128: *B. armifera*, n. var.; COCKERELL, op. cit. xiii, p. 36.
Bifidaria quadridentata, New Mexico; STERKI, Nautilus xii, p. 127: *B. prototypus*, Mexico; PILSBRY, P. Ac. Philad. 1899, p. 400: *B. rhoadsi*, Florida; PILSBRY, t. c. p. 403, fig. : n. spp.

Buliminidæ, monograph commenced; KOBELT in MARTINI & CHEMNITZ (296); *B. revoili*, Brgt., note on; SMITH (490).

Buliminus (*Petræus*) *somaliensis*, Somaliland; SMITH, J. Malac. vii, p. 59, fig.: *B.* (*Ovella*) *homhilensis*, *dahamisensis*, *lævior*, p. 11, *theodoræ*, Sokotra, *fusco-apicata*, *pauxillus*, (*Chondrula*) *granti*, Abd-el-Kuri, p. 12; SMITH, Bull. Liverp. Mus. ii: *B.* (*Petræus*) *valentini*, Transcaucasia, p. 408, (*P.*) *edessanus*, Asia Minor, p. 412, (*Napæus*) *linteræ*, ? N. India, p. 560, *mantongensis*, Tonkin, p. 562; KOBELT in MARTINI & CHEMNITZ (296), figg.: *B.* (?) *urgutensis*, Urgut near Samarcand; KOBELT in Rossmaessler's Icon., Neue Folge ix, p. 21, fig.: *B.* (*Rhachis*) *dubiosus*, p. 600, (*R.*) *pentheri*, p. 601, *movenensis*, p. 602, S. Africa; STURANY, Denk. Ak. Wien lxvii, figg.: *B.* (*Liparus*) *gratwicki*, W. Australia; COX, P. Linn. Soc. N. S. Wales xxiv, p. 435, fig.: *B.* (*Rhachis*) *chiradzuluensis*, (*Conulinus*) *nyasanus*, p. 586, *metuloides*, p. 587, British Central Africa; SMITH, P. Zool. Soc. London 1899, figg. : n. spp.

Buliminopsis (*Semibuliminus*, n. sect.) *beresowskii* (Schalf. MS.), p. 133, *gracilispira*, *piligera*, p. 135, *subcylindrica*, p. 136, *cylindrus*, *hirsuta*, p. 137, *achatinina*, p. 138, (*Stenogyropsis*, n. sect.) *potanini*, p. 139, West China; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, figg. : n. spp.

Clausilia, critical notes on the Swiss species; STOLL (519): *C. biplicata*, white variety; STANDEN, J. Conch. ix, p. 232: *C. fargesiana*, *duella*, *giardi*, and *ardouiniana*, notes on; BAVAY & DAUTZENBERG, J. Conchyl. xlvii, pp. 45 & 46, 50: *C.* (*Herilla*) *ziegleri*, *lævissima*, *conspersa*, n. vars.; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, pp. 152, 154 & 155: *C. bonthainensis*, Sarasin, is a synonym of *C. pyrrha*, Sykes; SYKES, Nautilus xiii, p. 86.

Clausilia bonthainensis, *minahassæ*, Celebes; SARASIN (456), p. 218, figg.: *C.* (*Oligoptychia*) *blissi*, Asia Minor; BOETTGER, Nachrbl. Deutsch. malak. Ges. 1899, p. 168: *C.* (*Delima*) *wohlberedti*, Montenegro; MOELLENDORFF, t. c. p. 167: *C.* (*Herilla*) *illyrica*, p. 152, (*Delima*) *nodulosa*, p. 154, (*Alinda*) *eupleuris*, p. 155, Montenegro; MOELLENDORFF, t. c.: *C. vanbuensis*, p. 38, *vatheleti*, p. 39, *callistoma*, p. 41, *coudeini*, p. 42, *freyi*, p. 44, *grangeri*, p. 46, (*Pseudonenia*) *messageri*, p. 47, *lemyrei*, p. 275, *auricoma*, p. 277, *babeensis*, p. 278, *gisota*, p. 280, *backanensis*, p. 281, (*Pseudonenia*) *dorri*, p. 283, *thatkeana*, p. 285, *dichroa*, p. 287, *semipolita*, p. 288, *falcifera*, p. 290, *eupleura*, p. 291, *sykesi*, p. 293, *hamonvillei*, p. 295, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlvii, figg. : n. spp.

Hypselostoma dohertyi, Tenimber I.; FULTON, P. Malac. Soc. London iii, p. 215, fig.: n. sp.

Paraphædusa, n. sect. of *Clausilia*, type *C. subpolita*, Smith; BOETTGER, Nachrbl. Deutsch. malak. Ges. 1899, p. 56.

Pupa anglica, Fér., white variety; COLLIER, J. Conch. ix, p. 152.

Pupa (*Leucochilus*) *niobe*, Tenimber I.; FULTON, P. Malac. Soc. London iii, p. 216, fig.: *P.* (*Nearctula*) *superioris*, Lake Superior; PILSBRY, Nautilus xii, p. 103: *P.* (*Pupilla*) *sonorana*, New Mexico; STERKI, t. c. p. 128: *P. cryptoplax*, S. Africa; MELVILL & PONSONBY, Ann. Nat. Hist. iv, p. 198, fig.: *P. pentheri*, S. Africa; STURANY, Denk. Ak. Wien lxvii, p. 606, fig. : n. spp.

Pupilla paulinoi, Portugal; LOCARD, Arch. Mus. Lyon vii, No. 1, p. 152: n. sp.

Semibuliminus, n. sect. of *Buliminopsis*, for *B. beresowskii*, n. sp.; MOELLENDORFF, Annuaire Mus. St. Petersb. 1899, p. 133.

Stenogyropsis, n. sect. of *Buliminopsis*, type *B. potanini*, n. sp.; MOELLENDORFF, t. c. p. 139.

Strobilops hubbardi, n. var.; PILSBRY, P. Ac. Philad. 1899, p. 404.

Vertigo gouldi, n. var.; PILSBRY, t. c. p. 314.
Vertigo andrusiana, Oregon; PILSBRY, t. c. p. 315, fig.: n. sp.

STENOGYRIDÆ and ACHATINELLIDÆ.

Achatina immaculata, its epiphragm; SMITH (483).
Achatina weynsi, Upper Congo; DAUTZENBERG, Ann. Soc. malac. Belgique xxxiv, p. 27, fig.: *A. pentheri*, S. Africa; STURANY, Denk. Ak. Wien lxvii, p. 592, fig.: *A. glaucina*, *johnstoni*, p. 590, *fragilis*, p. 591, British Central Africa; SMITH, P. Zool. Soc. London 1899, figg.: n. spp.
Amastra frosti, *simularis*, new varieties; ANCEY, P. Malac. Soc. London iii, p. 269, fig.
Baldwinia, n. subgen. of *Achatinella*, for group of *A. physa*, Newcomb; ANCEY, P. Malac. Soc. London iii, p. 270.
Cæcilianella castroiana, Portugal; LOCARD, Arch. Mus. Lyon vii, No. 1, p. 141: n. sp.
Cæcilioides acicula, note on; HORSLEY, J. Conch. ix, p. 164.
Callionepion, n. gen. for *C. iheringi*, n. sp., Brazil; PILSBRY & VANATTA, P. Ac. Philad. 1899, p. 371, fig.
Curvella sinuosa, S. Africa; MELVILL & PONSONBY, Ann. Nat. Hist. iv, p. 198, fig.: *C. nyasana*, *whytei*, British Central Africa; SMITH, P. Zool. Soc. London 1899, p. 588, figg.: n. spp.
Ferussacia castroiana, Portugal; LOCARD, Arch. Mus. Lyon vii, No. 1, p. 139: n. sp.
Glessula is ovoviviparous; PEILE, J. Bombay Soc. xii, p. 785.
Glessula latestriata, Shan States; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 166: n. sp.
Hapalus ovatus, Congo Free State; PUTZEYS, Ann. Soc. malac. Belgique xxxiv, Bull. p. lviii, fig.: n. sp.
Leptachatina, Gulick's species re-figured; SYKES (531).
Leptachatina isthmica, Maui; ANCEY, P. Malac. Soc. London iii, p. 270, fig.: n. sp.
Limicolaria habrawalensis, Somaliland; JOUSSEAUME, Naturaliste 1899, p. 91, n. sp.
Livinhacia arnoldi, S. Africa; STURANY, Denk. Ak. Wien lxvii, p. 595, fig.: n. sp.
Neobeliscus calcareus, anatomy; PILSBRY & VANATTA (413).
Opeas durbanense, S. Africa; STURANY, Denk. Ak. Wien lxvii, p. 597, fig.: *O. patzcuarense*, *odiosum*, *rhoadsæ*, Mexico; PILSBRY, P. Ac. Philad. 1899, p. 399: n. spp.
Pseudoglessula nseudweensis, Congo Free State; PUTZEYS, Ann. Soc. malac. Belgique xxxiv, Bull. p. lvii, fig.: n. spp.
Pseudopeas, n. subgen. [*Stenogyridæ*, *sed* ? genus], p. lviii, for *P. pulchellum*, *scalariforme*, p. lix, n. spp., Congo Free State; PUTZEYS, Ann. Soc. malac. Belgique xxxiv, Bull., figg.
Rhodea, see ante p. 67.
Spiraxis uruapamensis, Mexico; PILSBRY, P. Ac. Philad. 1899, p. 398: n. sp.
Stenogyra (*Opeas*) *kemensis*, p. 115, (*Prosopeas*) *gorontalensis*, p. 117, Celebes; SARASIN (456), figg.: n. spp.
Subulina leia, p. lvii, *subangulata*, lviii, Congo Free State; PUTZEYS, Ann. Soc. malac. Belgique xxxiv, Bull., figg.: *S. chiradzuluensis*, British Central Africa; SMITH, P. Zool. Soc. London 1899, p. 588, fig.: n. spp.
Thaanumia, n. gen. of *Achatinellidæ*, for *T. omphalodes*, n. sp., Oahu; ANCEY, P. Malac. Soc. London iii, p. 269, fig.
Tornatellina wakefieldiæ, COX, note on; HEDLEY, Rec. Austral. Mus. iii, p. 153.

SUCCINEIDÆ and VERONICELLIDÆ.

Atopos, anatomy of; SARASIN (456).
Atopos scutulatus, p. 106, *simrothi*, *cristagalli*, p. 107, *pristis*, p. 108, Celebes; SARASIN (456), figg. : n. spp.
Succinea retusa, n. var.; PILSBRY, Nautilus xii, p. 103.
Succinea tlalpamensis, Mexico; PILSBRY, P. Ac. Philad. 1899, p. 401: *S. dakaensis*, S. Africa; STURANY, Denk. Ak. Wien lxvii, p. 608, fig.: *S. bicolorata*, p. 271, *thaanumi*, *casta*, *garrettiana*, p. 272, Hawaii, *waianaensis*, Oahu, *inconspicua*, Hawaii, p. 273; ANCEY, P. Malac. Soc. London iii, figg. : n. spp.
Vaginula, anatomy of; SARASIN (456).
Vaginula melatomus, *boviceps*, Celebes; SARASIN (456), p. 70, figg. : n. spp.

BASOMMATOPHORA.

AURICULIDÆ, LIMNÆIDÆ, and PHYSIDÆ.

Ancylus fluviatilis, reproductive organs; LACAZE-DUTHIERS (259).
Ancylus papillaris, Mexico; MARTENS, Biol. Centr.-Amer. p. 402, fig. : n. sp.
Auricula catonis, *durbanica*, S. Africa; MELVILL & PONSONBY, Ann. Nat. Hist. iv, p. 199, figg. : n. spp.
Carychium balianum, Bali I.; FULTON, P. Malac. Soc. London iii, p. 216, fig.: n. sp.
Limnæa peregra abandoning its shell; STUBBS, J. Conch. ix, p. 164: *L. gracilis*, habitat of; KIRKLAND, Nautilus xii, pp. 119, 131: *L. stagnalis*, variation of; CROWTHER (110): *L. stagnalis*, embryology; NOURRY (361): *L. ovata*, n. var.; STOLL, Vierteljahrschr. Ges. Zurich xliv, p. 83.
Limnæa clessini, China; NEUMAYR (347), p. 778, fig.: *L. dakaensis*, S. Africa; STURANY, Denk. Ak. Wien lxvii, p. 610, fig.: *L. castroi*, p. 159, *servaini*, p. 164, *paulinoi*, p. 166, *lusitanica*, p. 167, Portugal; LOCARD, Arch. Mus. Lyon vii, No. 1 : n. spp.
Physa craveni, n. n. for *P. lirata*, Craven, nom. preocc.; STURANY, Denk. Ak. Wien lxvii, p. 612 [same sp. already so re-named by Ancey, 1886].
Physa paulinoi, p. 171, *castroi*, p. 172, Portugal; LOCARD, Arch. Mus. Lyon vii, No. 1 : n. spp.
Planorbis spirorbis, cause of abnormality in; STANDEN, J. Conch. ix, p. 216: *P. harni*, Pilsbry, is a synonym of *P. rubellus*, Sterki; PILSBRY, Nautilus xiii, p. 51.
Planorbis libanicus, Syria; WESTERLUND, Nachrbl. Deutsch. malak. Ges. 1899, p. 170: *P. tepicensis*, p. 393, *subpronus*, p. 396, Mexico; MARTENS, Biol. Centr.-Amer. figg. : n. spp.

OPISTHOBRANCHIATA.

NUDIBRANCHIATA.

Nudibranchiata, classification and list of British species; COOKE (89).
Nudibranchs from Samoa; ELIOT (145).
Cenia, development of; PELSENEER (380, 381).
Corambella, n. gen., for *C. depressa*, n. sp., Long Island; BALCH, P. Boston Soc. xxix, p. 151, fig.
Elysia nigropunctata, Pease, n. var.; HEDLEY, Mem. Austral. Mus. iii, p. 486, fig.
Elysia hendersoni, Samoa; ELIOT, P. Ac. Philad. 1899, p. 521, fig.: n. sp.
Polycerella davenportii, Long Island; BALCH, P. Boston Soc. xxix, p. 150, fig.: n. sp.

TECTIBRANCHIATA.

Akera aperta, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 485, fig.: n. sp.

Aplysiacea, monograph completed; CLESSIN in MARTINI & CHEMNITZ (296).

Aplysia, œsophagus of; BOTTAZZI (48).

Aplysia (*Tethys*) *benedicti*, Samoa; ELIOT, P. Ac. Philad. 1899, p. 513, fig.: *A. japonica* [name changed to *sieboldiana*, p. 54], p. 21, Japan, *australiana*, Australia, *paeteliana*, hab. incert., p. 22; CLESSIN in MARTINI & CHEMNITZ (296), figg. : n. spp.

Atys dactylus, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 484, fig.: n. sp.

Cylichna erecta, Funafuti; HEDLEY, t. c. p. 484, fig.: n. sp.

Dolabella hasselti, animal; ELIOT (145).

Dolabella neira, Sby., Banda Neira; CLESSIN in MARTINI & CHEMNITZ (296), p. 27, fig.: n. sp.

Doridium (*Aglaia*) *pilsbryi*, Samoa; ELIOT, P. Ac. Philad. 1899, p. 512, fig.: n. sp.

Retusa waughiana, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 482, fig.: n. sp.

Ringicula parvula, p. 486, *incisa*, p. 562, Funafuti; HEDLEY, t. c., figg. : n. spp.

NUCLEOBRANCHIATA.

Atlanta steindachneri, E. Mediterranean; OBERWIMMER, Denk. Ak. Wien lxv, p. 587, fig.: n. sp.

PROSOBRANCHIATA.

PECTINIBRANCHIATA.

TOXOGLOSSA.

TEREBRIDÆ, CONIDÆ, CANCELLARIIDÆ, and PLEUROTOMIDÆ.

Acamptogenotia, n. n. for *Pseudotoma*, Bellardi nec Stephens; ROVERETO, Atti Soc. Ligustica x, p. 103.

Admetinæ, n. subfam. of *Cancellariidæ* for *Admete*; COSSMANN (92), p. 31.

†*Agathotoma*, n. n. for *Ditoma*, Bellardi nec Ill.; COSSMANN, Rev. paleozool. iii, p. 45: also in (92), p. 192.

†*Aneurystoma*, n. subgen. of *Sveltia*, type *Cancellaria dufouri*, Grat., Miocene; COSSMANN (92), p. 23.

Cancellariidæ, notes on family and genera; COSSMANN (92), pp. 1–41: *C. reeveana*, note on; SMITH, P. Malac. Soc. London iv, p. 311.

Cancellaria maccoyi, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xi, p. 182, fig.: *C. pallida*, North-West Australia; SMITH, P. Malac. Soc. London iii, p. 313, fig.: *C. cretacea*, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 245 : n. spp.

Clathurella omaleyi, Gulf of Oman; MELVILL, Ann. Nat. Hist. iv, p. 88, fig.: *C. subabnormis*, *nodicincta*, New Zealand; SUTER, Tr. N. Zealand Inst. xxxi, p. 74, figg. : *C. irretita*, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 475, fig. : n. spp.

Conus (*Cylinder*) *clytospira*, Arabian Sea; MELVILL & STANDEN, Ann. Nat. Hist. iv, p. 461: *C. mariei*, Hab.—?; JOUSSEAUME, Naturaliste 1899, p. 8, fig.: n. spp.

†*Coptostoma*, n. sect. of *Admete*, type *Cancellaria quadrata*, Sby., Eocene; COSSMANN (92), p. 34.

Daphnella substriata, New Zealand; SUTER, Tr. N. Zealand Inst. xxxi, p. 76, fig.: n. sp.

Drillia empyrosia, California; DALL, Nautilus xii, p. 127: *D. investigatoris*, *captiva*, *capta*, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 240: *D. theoreta*, Persian Gulf; MELVILL, t. c. p. 85, fig. : n. spp.

Enatoma, n. n. for *Atoma*, Bellardi nec Latreille; ROVERETO, Atti Soc. Ligustica x, p. 103.

†*Gergovia*, n. sect. of *Merica*, type *Cancellaria platypleura*, Tate, Eocene; COSSMANN (92), p. 16.

Glyphostoma goubini, Hervier = *G. purpurascens*, Dnkr.; *G. aliceæ*, n. var.; HEDLEY, Mem. Austral. Mus. iii, p. 471.

Heteroeuclia, n. n. for *Euclia*, Adams nec *Euclea*, Hübner; ROVERETO, Atti Soc. Ligustica x, p. 103.

Mangelia victor, Sby., is a synonym of *Daphnella pupoidea*, H. Ad.; HEDLEY, Mem. Austral. Mus. iii, p. 476.

Mangilia chilosema, Mekran Coast, p. 85, *galigensis*, Persian Gulf, p. 86, *perlonga*, *theskeloides*, Karachi, p. 87; MELVILL, Ann. Nat. Hist. iv, figg.: *M. subaustralis*, p. 72, *flexicostata*, p. 73, New Zealand; SUTER, Tr. N. Zealand Inst. xxxi, figg.: *M.* (*Cythara*) *chionea*, Torres Straits; MELVILL & STANDEN, J. Linn. Soc. xxvii, p. 156, fig. : n. spp.

Pleurotoma optata, (*Bathytoma*) *oldhami*, (*Surcula*) *breviplicata*, p. 238, (*S.*) *eurina*, (*S.*) *præcipua*, (*S.*) *arcana*, p. 239, Indian Ocean; SMITH, Ann. Nat. Hist. iv : n. spp.

Surcula verrucosa, New Zealand; SUTER, Tr. N. Zealand Inst. xxxi, p. 70, fig.: n. sp.

Sveltella philippii, n. n. for *Cancellaria parva*, Phil. nec Lea; COSSMANN (92), p. 30.

Terebra walkeri, North-West Australia; SMITH, P. Malac. Soc. London iii, p. 313, fig.: *T.* (*Abretia*) *lightfooti*, S. Africa; SMITH, J. Conch. ix, p. 247, fig. : n. spp.

Thetidos, n. gen. of *Mangeliinæ*, type *T. morsura*, n. sp., Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 473, fig.

RACHIGLOSSA.

OLIVIDÆ, HARPIDÆ, MARGINELLIDÆ, VOLUTIDÆ, and MITRIDÆ.

†*Alocospira*, n. sect. of *Ancilla*, type *A. papillata*, Tate, Miocene; COSSMANN (92), p. 62.

Ancilla edithæ, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xi, p. 181, fig.: *A. leucospira*, p. 245, *glans*, p. 246, Indian Ocean; SMITH, Ann. Nat. Hist. iv : n. spp.

Aulicina, n. n. for *Vespertilio*, Klein nec Linn.; ROVERETO, Atti Soc. Ligustica x, p. 103.

†*Dentimargo*, n. sect. of *Marginella*, type *M. dentifera*, Lamk., Eocene; COSSMANN (92), p. 90.

Eteroaulica, n. n. for *Aulica*, Gray nec *Aulicus*, Spin.; ROVERETO, Atti Soc. Ligustica x, p. 103 [footnote].

†*Euryentome*, n. sect. of *Cryptospira*, type *C. crassilabra*, Conrad, Eocene; COSSMANN (92), p. 95.

Galeolella, n. n. for *Galeola*, Gray nec Klein; COSSMANN (92), p. 44.

Galeolopsia, n. n. for *Galeola*, Gray nec Klein; ROVERETO, Atti Soc. Ligustica x, p. 103.

Harpidæ, notes on family and genera; COSSMANN (92), pp. 72–79.

Marginellidæ, notes on family and genera; COSSMANN (92), pp. 79–99: *M. isseli*, n. var.; HEDLEY, Mem. Austral. Mus. iii, p. 560, fig.

Marginella punctilineata, S. Africa; SMITH, J. Conch. ix, p. 249, fig.: *M. iota*, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 469, fig.: *M. walkeri*, p. 208, *baudinensis*, p. 209, North-West Australia; SMITH, P. Malac. Soc. London iii, figg.: *M. halli*, *shorehami*, p. 179, *alternans*, *flindersi*, p. 180, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xi, figg.: n. spp.

Mitridæ, notes on family and genera; COSSMANN (92), pp. 148–182: *M. rhodochroa*, Hervier, is a synonym of *M. rhodinosphæra*, Melvill; MELVILL, J. Conch. ix, p. 152: Three species figured; HERVIER, J. Conchyl. xlvi, pp. 209–213, pl. x.

Mitra (*Strigatella*) *baldwinii*, Hawaiian Islands; MELVILL, J. Malac. vii, p. 67, fig.: *M.* (*Chrysame*) *buryi*, pp. 222, (*Costellaria*) *dilectissima*, p. 224, (*C.*) *georgii*, p. 225, Andamans; MELVILL & SYKES, P. Malac. Soc. London iii, figg.: *M.* (*Pusia*) *eliæ*, (*Costellaria*) *revelata*, Persian Gulf; MELVILL, Ann. Nat. Hist. iv, p. 90, figg.: n. spp.

Neptuneopsis, n. gen. for *N. gilchristi*, n. sp., S. Africa; SOWERBY (496), p. 5, fig.

Olividæ, notes on family and genera; COSSMANN (92), pp. 41–72.

Pseudocymbium, n. n. for *Wyvillea*, Watson nec Haswell (Crustacea); COSSMANN (92), p. 108.

Turricula pilsbryi, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 468, fig.: n. sp.

Volutidæ, notes on family and genera; COSSMANN (92), pp. 99–148: *V. roadknightæ*, McCoy, note on; KENYON (243): *V. bednalli*, note on; COX, P. Linn. Soc. N. S. Wales xxiii, p. 648.

FASCIOLARIIDÆ, BUCCINIDÆ, NASSIDÆ, COLUMBELLIDÆ, MURICIDÆ, and CORALLIOPHILIDÆ.

Buccinum striatissimum, Japan; SOWERBY, Ann. Nat. Hist. iv, p. 370, fig.: n. sp.

Chrysodomus intersculptus, Japan; SOWERBY, t. c. p. 371, fig.: n. sp.

Columbella, species from New Caledonian Archipelago, with new varieties; HERVIER, J. Conchyl. xlvii, p. 305.

Columbella (*Nitidella*) *apicata*, S. Africa; SMITH, J. Conch. ix, p. 247, fig.: *C. melvilli*, *alofa*, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 463, figg.: *C.* (*Mitrella*) *suprplicata*, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 244: *C. örstedi*, W. Central America; MARTENS, Archiv Naturg. lxiii [1897], p. 172, fig. [om. by error]: *C. goubini*, p. 332, *subphilodicia*, p. 333, *desmia*, p. 343, *loyaltyensis*, p. 347, *procellarum*, p. 349, *lifouana*, p. 358, *ocellatula*, p. 367, *brevissima*, p. 372, *roseotincta*, p. 373, *succinea*, p. 375, *obesula*, p. 376, *dautzenbergi*, p. 377, *sublachryma*, p. 382, *pinguis*, p. 384, *alphonsiana*, p. 387, *iozona*, p. 388, *fischeri*, p. 389, New Caledonian Archipelago; HERVIER, J. Conchyl. xlvii, figg.: n. spp.

Cominella (?) *prolongata*, S. Africa; SMITH, J. Conch. ix, p. 248, fig.: n. sp.

Coralliobia fimbriata, note on; SMITH, P. Malac. Soc. London iii, p. 311.

Coralliophila indica, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 244: n. sp.

†*Crenisutura*, n. n. for *Thiarella*, Sacco nec Swainson; COSSMANN, Rev. paleozool. iii, p. 46.

Cumopsis, n. n. for *Cuma*, Humphrey nec Milne-Edwards; ROVERETO, Atti Soc. Ligustica x, p. 105.

Donovania minima belongs to the *Buccinidæ*; WOODWARD, P. Malac. Soc. London iii, p. 235.

Fusus (*Neptunea*) *antiquus*, range in time and space; HARMER, Congr. Zool. 1898 [1899], p. 222, fig.

Fusus townsendi, Persian Gulf; MELVILL, Ann. Nat. Hist. iv, p. 83, fig.: *F. captivus*, Indian Ocean; SMITH, t. c. p. 242 : n. spp.

Hemipolygona, n. n. for *Chascax*, Watson nec Ritgen; ROVERETO, Atti Soc. Ligustica x, p. 104.

Janiopsis, n. n. for *Jania*, Bellardi nec Lamouroux; ROVERETO, Atti Soc. Ligustica x, p. 104.

Latirus (*Peristernia*) *pagodæformis*, Mekran Coast; MELVILL, Ann. Nat. Hist. iv, p. 89, fig.: n. sp.

Murex (*Pteronotus*) *saibaiensis*, p. 161, (*Ocinebra*) *salmoneus*, p. 162, Torres Straits; MELVILL & STANDEN, J. Linn. Soc. xxvii, figg.: *M. funafutiensis*, p. 458, *radula*, p. 459, Funafuti; HEDLEY, Mem. Austral. Mus. iii, figg. : n. spp.

Nassa zailensis, n. var.; MELVILL & SYKES, P. Malac. Soc. London iii, p. 221, fig.

Nassa (*Alectryon*) *fretorum*, Torres Straits; MELVILL & STANDEN, J. Linn. Soc. xxvii, p. 159, fig.: *N. semitexta*, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 462, fig.: *N. subconstricta*, Port Canning; SOWERBY, P. Malac. Soc. London iii, p. 301, fig.: *N.* (*Hima*) *ischna*, Persian Gulf; MELVILL, Ann. Nat. Hist. iv, p. 84, fig.: *N. aracanensis*, *diluta*, Indian Ocean; SMITH, t. c. p. 243 : n. spp.

Nassaria lævior, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 242: n. sp.

Neptunea sinistrorsa, Desh., in West Mediterranean; MELI (305).

Ocinebra pusulata, p. 71, *requieni*, p. 72, France; LOCARD, Echange xv: n. spp.

Pisania angusta, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 243: n. sp.

Pisianura, n. n. for *Anura*, Bellardi nec Gray nec Gervais; ROVERETO, Atti Soc. Ligustica x, p. 104.

Polytropalicus, n. n. for *Polytropa*, Swainson nec Defrance; ROVERETO, t. c. p. 105.

Pteronotus carpenteri, California; DALL, Nautilus xii, p. 138 : n. sp.

Pterymurex, n. n. for *Pteronotus*, Swainson nec Gray; ROVERETO, Atti Soc. Ligustica x, p. 105.

Purpura scobina, n. var.; SUTER, J. Malac. vii, p. 55, fig.

Tritonidea delicata, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 242: n. sp.

Trophon, note on New Zealand species, also on radula of *T. patens*, with n. var. of *T. ambiguus*; SUTER, J. Malac. vii, p. 55, fig.

Trophon tenuirostratus, *indicus*, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 241, figg.: n. spp.

LOTORIIDÆ, CASSIDIDÆ, DOLIIDÆ, CYPRÆIDÆ, STROMBIDÆ, and STRUTHIOLARIIDÆ.

Cassisoma, n. n. for *Cassis*, Klein (1753 nec 1734); ROVERETO, Atti Soc. Ligustica x, p. 107.

Cypræa caput-serpentis and *C. moneta*, notes on the groups of, with new variety of *C. mauritiana*, L.; MELVILL & STANDEN, J. Conch. ix, p. 233.

Erato olivaria, Karachi; MELVILL, Ann. Nat. Hist. iv, p. 91, fig.: n. sp.

Foratidolium, n. n. for *Perdix*, Mont. nec Brisson; ROVERETO, Atti Soc. Ligustica x, p. 107.

Lampas bardeyi, Somali coast; JOUSSEAUME, Naturaliste 1899, p. 133: n. sp.

Lotorium durbanense, S. Africa; SMITH, J. Conch. ix, p. 248, fig.: n. sp.

Ovula hervieri, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 448, fig.: n. sp.
Pseudobursa, n. n. for *Bursa*, H. & A. Adams nec Bolten; ROVERETO, Atti Soc. Ligustica x, p. 106.
Strombidæ, classification of; CHADWICK (73).
Zemira, Adams, probably belongs to the *Struthiolariidæ*; HEDLEY, Rec. Austral. Mus. iii, p. 118.

CERITHIIDÆ, NERINEIDÆ, TRICHOTROPIDIDÆ, VERMETIDÆ, TURRITELLIDÆ, and CÆCIDÆ.

†*Aphanotænia*, n. g., type *Nerinea strigillata*, Credner; COSSMAN, Mem. Soc. geol. France, Pal. no. 19, 1898, p. 154 [also in (92), p. 186].
Bittium torresiense, Torres Straits; MELVILL & STANDEN, J. Linn. Soc. Zool. xxvii, p. 168, fig.: n. sp.
Cæcum vertebrale, p. 425, *gulosum*, p. 426, Funafuti; HEDLEY, Mem. Austral. Mus. iii, figg.: *C. amaltheanum*, *legumen*, Funafuti; HEDLEY, t. c. p. 559, figg. : n. spp.
Cerithidea (*Aphanistylus*) *weyersi*, Sumatra; DAUTZENBERG, Ann. Soc. malac. Belgique xxxiv, p. 8, fig.: n. sp.
Cerithiopsis electrina, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 438, fig.: n. sp.
Cerithium breve, new variety; HEDLEY, Mem. Austral. Mus. iii, p. 432, fig.
Cerithium oceanicum, p. 431, *spiculum*, *strictum*, p. 433, *impendens*, p. 435, *elegantissimum*, p. 436, Funafuti; HEDLEY, t. c. figg. : n. spp.
Contumax, n. gen. of *Cerithiidæ*, type *C. decollutus*, n. sp., Funafuti; HEDLEY, t. c. p. 436, fig.
†*Endiatrachelus*, n. sect. of *Nerinella*, type *Nerinea erato*, d'Orb.; COSSMANN, Mem. Soc. geol. France, Pal. no. 19, 1898, p. 134 [also in (92), p. 185].
†*Fibuloptyxis*, n. sect. of *Melanioptyxis*, type *Nerinea umbilicifera*, Piette, em., Upper Bathonian, Ardennes; COSSMANN, Mem. Soc. geol. France, Pal. no. 19, 1898, p. 66.
Hemitenagodes, n. n. for *Montfortia*, Della Campana nec Recluz; ROVERETO, Atti Soc. Ligustica x, p. 108.
Sinusigera mediterranea, E. Mediterranean; OBERWIMMER, Denk. Ak. Wien lxv, p. 592, fig.: n. sp.
Trichotropis gabrieli, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xi, p. 183, fig.: n. sp.
Triforis, notes on several species; HEDLEY, Mem. Austral. Mus. iii, pp. 439–448: Many species figured; HERVIER, J. Conchyl. xlvi, pp. 270–313, pl. xv–xvii.
Triforis (*Ino*) *excelsior*, Torres Straits; MELVILL & STANDEN, J. Linn. Soc. Zool. xxvii, p. 166, fig.: *T. torquatus*, p. 440, *clio*, p. 443, *thetis*, p. 445, Funafuti; HEDLEY, Mem. Austral. Mus. iii, figg. : n. spp.
Turritella, Miocene forms were viviparous; BURNS (66).
Vermetus maximus, note on; HEDLEY, Mem. Austral. Mus. iii, p. 426.

PSEUDOMELANIIDÆ, MELANIIDÆ, PLEUROCERIDÆ, and LITTORINIDÆ.

Brotella, n. n. for *Acrostoma*, Brot nec Le Sauvage, nec Grube; ROVERETO, Atti Soc. Ligustica x, p. 109.
Bythoceras howesii, anatomy; MOORE (335A).
Echinellopsis, n. n. for *Echinella*, Swainson nec Agardh; ROVERETO, Atti Soc. Ligustica x, p. 109.

Eumelania, n. n. for *Striatella*, Brot nec Agardh ; ROVERETO, t. c. p. 109.
Goniobasis acutifilosa, n. var. ; PILSBRY, Nautilus xiii, p. 65.
Hemipirena, n. n. for *Claviger*, Haldeman nec Preyssler ; ROVERETO, Atti Soc. Ligustica x, p. 109.
Lacuna tenuistriata, Persian Gulf ; MELVILL, Ann. Nat. Hist. iv, p. 96, fig. : n. sp.
Littorina littorea, variation of ; BUMPUS (63).
Melaniidæ, anatomical and other notes on ; MOORE (334).
Melania baldwini, Maui ; ANCEY, P. Malac. Soc. London iii, p. 273. fig. : n. sp.
Nassopsis nassa, anatomy ; MOORE (335A).
Nassopsis guillemei, p. 172, *variabilis*, p. 174, Tanganyika ; MARTEL & DAUTZENBERG, J. Conchyl. xlvii, figg. : n. spp.
Nigriculina, n. n. for *Nigritella*, Brot nec Martens ; ROVERETO, Atti Soc. Ligustica x, p. 109.
Paramelania imperialis, Giraud, new varieties ; MARTEL & DAUTZENBERG, J. Conchyl. xlvii, pp. 178–180, figg.
Sphæromelania, n. n. for *Pachychilus*, Lea nec Eschscholtz ; ROVERETO, Atti Soc. Ligustica x, p. 109.
Stilospirula, n. n. for *Macrospira*, Sandberger nec Guilding, nec Swainson ; ROVERETO, t. c. p. 109.
Sublacuna, n. n. for *Streblorhampus*, Tate nec Cab. ; COSSMANN, Rev. paleozool. iii, p. 45.
Temanella, n. n. for *Medoria*, (Leach) Gray nec Rob. ; ROVERETO, Atti Soc. Ligustica x, p. 109.

RISSOIIDÆ, PALUDESTRINIDÆ, VIVIPARIDÆ, VALVATIDÆ, and AMPULLARIIDÆ.

Amnicola sanctijohannis, p. 20, *johnsoni*, p. 21, Florida ; PILSBRY, Nautilus xiii : *A. subangulata*, p. 435, *melanioides*, p. 436, Costa Rica ; MARTENS, Biol. Centr.-Amer. figg. : n. spp.
Ampullaria, nervous system of ; BURNE (65).
Ampullaria miamiensis, Florida ; PILSBRY, P. Ac. Philad. 1899, p. 365 : *A. strebeli*, E. Mexico, p. 415, *costaricana*, Nicaragua and Costa Rica, p. 418, *conoidea*, Costa Rica, p. 423 ; MARTENS, Biol. Centr.-Amer. figg. : n. spp.
Cleopatra broecki, Congo Free State ; PUTZEYS, Ann. Soc. malac. Belgique xxxiv, Bull. p. lx, fig. : n. sp.
Cochliopa trochulus, Costa Rica, *infundibulum*, Guatemala ; MARTENS, Biol. Centr.-Amer. p. 429, figg. : n. spp.
Diala virgata, Funafuti ; HEDLEY, Mem. Austral. Mus. iii, p. 422, fig. : *D. profunda*, Funafuti ; HEDLEY, t. c. p. 558, fig. : n. spp.
Fenella natalensis, S. Africa ; SMITH, J. Conch. ix, p. 249, fig. : n. sp.
Fluminicola columbiana (Hemphill), Washington and Idaho, *erythropoma*, Nevada, p. 125, *californica*, California, p. 126 ; PILSBRY, Nautilus xii : n. spp.
Fossarulus sinensis, China ; NEUMAYR (347), p. 775, fig. : n. sp.
Hauffenia, n. subgen. of *Horatia*, for *H. tellinii* and *valvatæformis*, n. spp., Friuli, N. Italy ; POLLONERA, Bol. Mus. Torino xiii, p. 3, figg.
Lithoglyphus kreitneri, China ; NEUMAYR (347), p. 777, fig. : n. sp.
Paludestrina jenkinsi and *P. confusa*, notes on ; KENNARD & WOODWARD (242).
Paludestrina imitator, *stearnsiana*, California ; PILSBRY, Nautilus xii, p. 124 : *P. monas*, Florida ; PILSBRY, op. cit. xiii, p. 21 : *P. castroi*, Portugal ; LOCARD, Arch. Mus. Lyon vii, No. 1, p. 196 : n. spp.

Paludina vivipara, white variety; FRANZ, Nachrbl. Deutsch. malak. Ges. 1899, p. 122.
Peringia castroi, p. 197, *lusitanica*, *paulinoi*, p. 198, Portugal; LOCARD, Arch. Mus. Lyon vii, No. 1 : n. spp.
Potamolithus jacuhyensis, Brazil; PILSBRY, Nautilus xii, p. 113: n. sp.
Rissoia ischna, n. n. for *R. cylindracea*, Ten.-Woods nec Krynicki, *verconis*, n. n. for *badia*, Petterd nec Adams, *tenisoni*, n. n. for *australis*, Ten.-Woods nec Sby., p. 233, *beddomei*, n. n. for *flamia*, Beddome nec *flammia* Dunker, *mixta*, n. n. for *ochroleuca*, Brazier nec Brusina, *melanochroma*, n. n. for *melanura*, Woods nec Adams, p. 234, *devecta*, n. n. for *gracilis*, Adams nec Macgillivray, p. 235, *garretti*, n. n. for *venusta*, Garrett nec Philippi, p. 236; TATE, Tr. R. Soc. S. Austral. xxiii.
Rissoa invisibilis, p. 418, *finckhi*, p. 557, *poolei*, p. 558, Funafuti; HEDLEY, Mem. Austral. Mus. iii, figg. : n. spp.
Rissoina quasillus, Melv. & St., and *R. turricula*, Pease, are respectively synonyms of *R. exasperata*, Souverbie, and *R. plicata*, Adams; HEDLEY, t. c. pp. 419, 421.
Rissoina hedleyi, S. Australia and Victoria, *semisculpta*, Tasmania, p. 241, *punctatissima*, S. Australia, p. 242; TATE, Tr. R. Soc. S. Austral. xxiii, figg.: *R. gemmea*, *polytropa*, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 420, figg. : n. spp.
Scaliola lapillifera, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 415, fig.: n. sp.
Spekia zonata, anatomy; MOORE (335).
Stenothyra weyersi, Sumatra; DAUTZENBERG, Ann. Soc. malac. Belgique xxxiv, p. 8, fig.: n. sp.
Tanganyikia rufofilosa, anatomy; MOORE (335).
Vivipara unicolor, n. var.; STURANY (521), p. 621.

CYCLOPHORIDÆ and CYCLOSTOMATIDÆ.

Supplement to catalogue of recent forms; KOBELT & MOELLENDORFF (251).
Radula of genera of *Cyclophoridæ* and *Cyclostomatidæ*; SARASIN (456).
Adelomorpha dohertyi, Tenimber I.; FULTON, P. Malac. Soc. London iii, p. 219, fig.: n. sp.
Adelopoma is probably a synonym of *Diplommatina*; ANCEY, J. Conchyl. xlvii, p. 194.
Aferulus, n. subgen. of *Cyclophorus* for group of *C. elatior*; MARTENS, Beschalte Weichthiere D.-O. Afrikas (Nachträge), p. 295, 1897 [omitted by error].
Alycæus kuekenthali, p. 62, *subfossilis*, p. 63, Celebes; SARASIN (456), figg. : n. spp.
Bellardiella crassilabris, Borneo or New Guinea; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 91: n. sp.
Callianella fulgida, Buru I.; FULTON, P. Malac. Soc. London iii, p. 218, fig.: n. sp.
Cataulus nietneri, new varieties; COLLETT, J. Malac. vii, p. 85.
Cataulus greeni, Ceylon; SYKES, t. c. p. 30, fig.: n. sp.
Cyathopoma innocens, Ceylon; SYKES, t. c. p. 29, fig.: n. sp.
Cyclophorus dohertyi, Sangir I.; FULTON, P. Malac. Soc. London iii, p. 218, fig.: *C. binoyæ*, *vescus*, Ceylon; SYKES, J. Malac. vii, p. 29, figg.: *C. rugosus*, Congo Free State; PUTZEYS, Ann. Soc. malac. Belgique xxxiv, Bull. p. lv, fig. : n. spp.
Cyclotus guttatus, p. 42, *dimidiatus*, p. 44, new varieties; SARASIN (456).
Cyclotus macassaricus, p. 37, *pandarus*, p. 41, *nigrispirus*, p. 46, *buginensis*, p. 47, *jellesmæ*, p. 48, *seducens*, p. 49, *bonensis*, p. 50, *latruncularius*,

p. 51, (*Opisthoporus*) *celebicus*, p. 53, Celebes; SARASIN (456), figg.: *C.* (?) *isipingoensis*, S. Africa; STURANY, Denk. Ak. Wien lxvii, p. 617, fig. : n. spp.

Diplommatina, notes on American species; ANCEY (6).

Diplommatina tenuiplica, Japan; PILSBRY, P. Ac. Philad. 1899, p. 525: *D. soputensis*, p. 58, *masarangensis*, p. 59, Celebes; SARASIN (456), figg.: *D. baliana*, Bali I. and Sumba I., (*Palaina*) *moellendorffi*, p. 216, (*P.*) *tumens*, Celebes, (*Arinia*) *talautana*, Talaut I., (*Paxillus*) *lævis*, Pulo Laut I., p. 217; FULTON, P. Malac. Soc. London iii, figg. : n. spp.

Holcopoma, n. n. for *Pleuropoma*, Wagner nec Moellendorff; KOBELT & MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 139.

Lagochilus pachytropis, new var.; SARASIN (456), p. 27: *L. lignarius*, Pfr., note on animal; SUTER, J. Malac. vii, p. 53.

Lagocheilus occultus, Ceylon; SYKES, J. Malac. vii, p. 28, fig.: *L. celebicum*, p. 27, *buginense*, p. 28, *inconspicuum*, p. 29, (*Mylicotrochus*, n. subgen.) *celebensis*, p. 31, Celebes; SARASIN (456), figg. : n. spp.

Leptopoma, radula of; SARASIN (456): *L. manadense*, Pfr., var. nov.; SCHEPMAN, Notes Leyden Mus. xxi, p. 31: *L. sarasinorum*, Kob., is a synonym of *L. manadense*, Pfr.; SARASIN (456): Notes on Ceylonese species; SYKES, J. Malac. vii, p. 26: *L. moussoni*, n. subsp.; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 157.

Leptopoma vexillum, p. 23, *holosericum*, p. 24, Celebes; SARASIN (456), figg. : n. spp.

Lithidion forbesianum, Abd-el-Kuri; SMITH, Bull. Liverp. Mus. ii, p. 12: n. sp.

Megalacme, n. subgen. of *Acme* for *A. gentilei*, Poll., &c.; KOBELT & MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 129.

Mylicotrochus, n. subgen. of *Lagochilus*, for *L. celebensis*, n. sp.; SARASIN (456), p. 30.

Omphalotropis rotumana, Smith, is a synonym of *O. zebriolata*, Mousson; HEDLEY, Mem. Austral. Mus. iii, p. 417.

Omphalotropis (*Selenomphala*) *tenuis*, Timor; FULTON, P. Malac. Soc. London iii, p. 219, fig.: *O. hercules*, Buru; PONSONBY & SYKES, t. c. p. 308, fig. : n. spp.

Otopoma poirieri, Brgt., note on; SMITH (490).

Pomatias nyasanus, British Central Africa; SMITH, P. Zool. Soc. London 1899, p. 591, fig.: n. sp.

Porocallia monticola, p. 55, *hygrophila*, p. 56, Celebes; SARASIN (456), figg. : n. spp.

Pupina (*Moulinsia*) *cylindrica*, Gilolo, (*Porocallia*) *mirabilis*, Sangir & Gilolo; FULTON, P. Malac. Soc. London iii, p. 218, figg.: *P. laffonti* (Ancey MS.) [already described, cf. Zool. Rec. xxxv, p. 69], p. 51, *anceyi*, p. 53, *tonkiana*, p. 54, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlvii, figg. : n. spp.

Rhiostoma strubelli, Shan States; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1899, p. 166: n. sp.

TRUNCATELLIDÆ.

Truncatella vitiana, Gould, is a synonym of *T. valida*, Pfeiffer; HEDLEY, Mem. Austral. Mus. iii, p. 417.

CAPULIDÆ and NATICIDÆ.

Crepidula, dimorphism in; CONKLIN (87).

Natica, note on parasite; VAULLEGEARD (567): *N. strongyla*, n. var.; MELVILL & SYKES, P. Malac. Soc. London iii, p. 226, fig.

Natica ponsonbyi, Karachi; MELVILL, Ann. Nat. Hist. iv, p. 91, fig.: n. sp.
Sigaretus oldroydii, note on; DALL, Nautilus xiii, p. 85.

PTENOGLOSSA.

SCALIDÆ.

Scala revoluta, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 414, fig.: n. sp.
Scalaria fimbriolata, Melv., note on; MELVILL, J. Conch. ix, p. 181: *S. novoseelandiæ*, and *S. reevei*, both of Clessin, are respectively synonyms of *S. tenella* and *S. zelebori*; SUTER, J. Malac. vii, p. 54.
Scalaria (*Cirsotrema*) *hidryma*, (*Constantia*) *standeni*, Karachi; MELVILL, Ann. Nat. Hist. iv, p. 92, figg.: *S. subcasta*, *bengalensis*, Indian Ocean; SMITH, t. c. p. 246: n. spp.

GYMNOGLOSSA.

EULIMIDÆ and PYRAMIDELLIDÆ.

Actæopyramis psyche, Karachi; MELVILL, Ann. Nat. Hist. iv, p. 93, fig.: n. sp.
Eulimidæ, monograph commenced; CLESSIN in MARTINI & CHEMNITZ (296).
Eulima (*Hypermastus*, n. subgen.) *coxi*, N. S. Wales; PILSBRY, P. Ac. Philad. 1899, p. 258, fig.: *E. lowei*, *bistora*, p. 254, California, *randolphi*, Alaska, p. 256; VANATTA, t. c., figg.: *E. australasiaca*, Torres Straits; MELVILL & STANDEN, J. Linn. Soc. Zool. xxvii, p. 173, fig.: *E. vitrea* (A. Adams MS.), Fiji Is.; CLESSIN in MARTINI & CHEMNITZ (296), p. 10, fig.: *E. decipiens*, p. 411, *diaphana*, p. 556, Funafuti; HEDLEY, Mem. Austral. Mus. iii, figg.: *E. munda*, p. 249, *natalensis*, *dilecta*, p. 250, S. Africa; SMITH, J. Conch. ix, figg. : n. spp.
Herviera, n. gen. of *Pyramidellidæ*, type *Pyrgulina gliriella*, Melv. and Standen; MELVILL & STANDEN, J. Conch. ix, p. 185.
Herviera isidella, Loyalty Islands; IIDEM, t. c., p. 186, fig. : n. sp.
Hypermastus, n. subgen. of *Eulima*, for *E. coxi*, n. sp.; PILSBRY, P. Ac. Philad. 1899, p. 258.
Obtortio, n. gen. of *Turbonillidæ*, type *Rissoa pyrrhacme*, Melv. & Stndn.: HEDLEY, Mem. Austral. Mus. iii, p. 412, fig.
Odontostomia robusta, p. 556, *biplicata*, p. 557, Funafuti; HEDLEY, Mem. Austral. Mus. iii, figg. : n. spp.
Odostomia chitonicola, S. Africa; SMITH, J. Conch. ix, p. 250, fig.: *O. eutropia*, Karachi; MELVILL, Ann. Nat. Hist. iv, p. 94, fig. : n. spp.
Pyrgulina epentromidea, Persian Gulf, p. 94, *glycisma*, Karachi, p. 95; MELVILL, Ann. Nat. Hist. iv, figg. : n. spp.
Stylifer variciferus, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 411, fig. : n. sp.
†*Trajanella*, n. g., type *Eulima amphora*, d'Orb., Upper Cretaceous; POPOVICI-HATZEG, Mem. Soc. geol. France, Pal. No. 20, p. 9.
Turbonilla pilsbryi, St. Thomas, *asperula*, Bermuda, p. 151, *stimpsoni*, Carolina, *incisa*, p. 156, *conradi*, p. 159, Florida, *rushii*, Uruguay, *pyrrha*, St. Thomas, p. 160, *unilirata*, Cape Hatteras, *penistoni*, Bermuda, p. 165, *swiftii*, St. Thomas, p. 166, *leuca*, *heilprini*, p. 167, Bermuda, *abrupta*, *inclinata*, St. Thomas, *compsa*, hab. incert., p. 168, *dalli*, *hemphilli*, Florida, p. 169, *atypha*, Uruguay, p. 170; BUSH, P. Ac. Philad. 1899, mostly figg. : n. spp.

SCUTIBRANCHIATA.

HELICINIDÆ.

Helicina, radula of; SARASIN (456): *H. citrinella*, n. var.; SARASIN (456), p. 6.

Helicina crassidens, S. Australia; TATE, Tr. R. Soc. S. Austral. xxiii, p. 247, fig.: n. sp.

Lucidella foxi, trochiformis, Jamaica; PILSBRY, Nautilus xiii, p. 56 : n. spp.

Schazicheila fragilis, vanattai, Mexico; PILSBRY, P. Ac. Philad. 1899, p. 391 : n. spp.

NERITIDÆ, TURBINIDÆ, TROCHIDÆ, and CYCLOSTREMATIDÆ.

†*Adeorbisina*, n. g., for *A. canavarii*, n. sp. from the zone of *Lioceras opalinum* in Calabria; GRECO, Palæontogr. ital. iv, 1898, p. 121.

Astele stenomphala, North-West Australia; SMITH, P. Malac. Soc. London iii, p. 209, fig.: n. sp.

Astralium bathyraphe, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 247: n. sp.

Calliostoma burnupi, S. Africa; SMITH, J. Conch. ix, p. 250, fig.: *C.* (*Eutrochus*) *septenarium*, Torres Straits; MELVILL & STANDEN, J. Linn. Soc. xxvii, p. 176, fig.: *C. deceptum*, North-West Australia; SMITH, P. Malac. Soc. London iii, p. 312, fig. : n. spp.

Cirsonella ovata, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 407, fig.: *C.* (?) *neozelanica*, New Zealand; MURDOCH, P. Malac. Soc. London iii, p. 320, fig. : n. spp.

Cyclostrema inscriptum, delectabile, S. Australia, *caperatum*, Victoria, p. 216, *charopa*, Tasmania and S. Australia, p. 217, *mayii*, p. 218, *crebresculptum*, p. 219, Tasmania, *contabulatum*, S. Australia, p. 222; TATE, Tr. R. Soc. S. Austral. xxiii, figg. : n. spp.

†*Damesiella*, n. g., for *Naticella* (?) *anomala*, Kittl and *D. torulosa*, n. sp., Trias; TORNQUIST, Zeitschr. Deutsch. geol. Ges. l, p. 676.

Guildfordia yokæ, Japan; JOUSSEAUME, Naturaliste 1899, p. 48: n. sp.

Leptothyra delecta, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 248: n. sp.

Liotia parvissima, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 554, fig.: *L. mayana*, Tasmania, Victoria, and S. Australia, p. 227, *densilineata*, Tasmania, p. 228; TATE, Tr. R. Soc. S. Austral. xxiii, figg. : n. spp.

Lodderia, n. n. for *Cyclostremella*, Tate nec Bush; TATE, Tr. R. Soc. S. Austral. xxiii, p. 222.

Magadis, n. gen. for *M. eumerintha*, n. sp., Torres Straits; MELVILL & STANDEN, J. Linn. Soc. xxvii, p. 174, fig.

Mecoliotia, n. gen. of *Liotiidæ* for *M. halligani*, n. sp., Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 555, fig.

Microtheca acidalia, Torres Straits; MELVILL & STANDEN, J. Linn. Soc. xxvii, p. 177, fig.: n. sp.

Monilea simulans, North-West Australia; SMITH, P. Malac. Soc. London iv, p. 314, fig.: n. sp.

†*Mooria*, n. n. for *Pterocheilos*, Moore, nec *Pterocheilus*, Oken; COSSMANN, Rev. paleozool. iv, p. 134 [appears a synonym of *Tinochilus*, Fischer, 1885].

Neritina pulligera, n. var.; DAUTZENBERG, Ann. Soc. malac. Belgique xxxiv, p. 23: *N. leodica*, Carlier, is a synonym of *N. fluviatilis*, DEWALQUE, t. c. Bull. p. lxxxii.
Phasianella pullus is correct, not *P. pulla*; COOKE (88).
Priotrochus sepulchralis, Persian Gulf; MELVILL, Ann. Nat. Hist. iv, p. 96, fig.: n. sp.
Pseudeunema, n. n. for *Gonionema*, Koken, nec *Gonionemus*, Agass.; COSSMANN, Rev. paleozool. iii, p. 45.
Solariella oxycona, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 248: n. sp.
Teinostoma starkeyæ, N. S. Wales; HEDLEY, P. Linn. Soc. N. S. Wales xxiv, p. 433, fig.: *T. qualum*, pp. 406, 552, *parvulum*, *rotatum*, p. 553, Funafuti; HEDLEY, Mem. Austral. Mus. iii, figg.: n. spp.
Trochidæ, development of; ROBERT (440).
Turbo (*Cantrainea?*) *incoloratus*, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 247: n. sp.
Valvatella beringensis, *albolineata*, Bering Sea; SMITH, P. Malac. Soc. London iii, p. 206, figg.: n. spp.

HALIOTIDÆ, PLEUROTOMARIIDÆ, BELLEROPHONTIDÆ, and FISSURELLIDÆ.

†*Ectomaria*, Koken, on the genus; DONALD (140).
Fissurella delicata, Indian Ocean; SMITH, Ann. Nat. Hist. iv, p. 249: n. sp.
Haliotis fulgens, n. var.; STEARNS, Nautilus xii, p. 106.
†*Hormotoma*, Salter, on the genus; DONALD (140).
Lucapina crenulata, note on parasite of; JOHNSON, P. Calif. Ac. Zool. i, p. 178.
Phenacolepas lingua-viverræ, Torres Straits; MELVILL & STANDEN, J. Linn. Soc. xxvii, p. 179, fig.: *P. senta*, Funafuti; HEDLEY, Mem. Austral. Mus. iii, p. 403, fig.: n. spp.
Pleurotomaria, monograph of recent species; BOUVIER & FISCHER (54): also IIDEM, Bull. Mus. Harvard xxxii: *P. beyrichi*, note on; DAUTZENBERG & FISCHER, J. Conchyl. xlvi, p. 218.
Pleurotomaria salmiana, Japan; ROLLE, Nachrbl. Deutsch. malak. Ges. 1899, p. 62: also t. c. p. 161, fig.: n. sp.
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VIII. BRACHIOPODA.

BY

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BY

ARTHUR WILLEY, D.Sc.

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ENTOPROCTA.

Loxosoma annelidicola P. van Ben. & Hesse, compared with *L. phascolosomatum* Vogt.; DE SAINT-JOSEPH (see Vermes-Record), Ann. Sci. nat. (8) x, pp. 182 & 183.

A † is prefixed to the fossil forms.

ECTOPROCTA.

GYMNOLÆMA.

CYCLOSTOMA.

†*Acanthocladia* King sp. ind., p. 86; DIENER (7 A).
†*Atagma lonsdalei*, n. sp., p. 401; GREGORY (9).
†*Berenicea regularis* Orb. var. *gamblei*, n. v., p. 94, var. *elliptica*, n. v., p. 95. *acanthina*, n. sp., p. 96, *jessoni* (Vine) var. *reniformis*, n. v., p. 103, *canui*, n. sp., p. 107, *spissa*, n. sp., p. 108; GREGORY (9).
†*Ceidæ*, a spurious family, Ceids being merely worn and weathered *Eleidæ*, p. 291; GREGORY (9).
†*Cellulipora ornata* d'Orb. var. *devonica*, n. v., p. 145; GREGORY (9).
†*Clinopora spinigera*, n. sp., p. 274; GREGORY (9).
†*Crisina* (*Tervia*) *gibbera*, n. sp., p. 173, *gamblei*, n. sp., p. 174; GREGORY (9).
†*Cryptoglena gamblei*, n. sp., p. 404; GREGORY (9).
†*Entalophora pergensi*, n. sp., p. 220, *gamblei*, n. sp., p. 247; GREGORY (9).
†*Fenestella* sp. aff. *fossula* Lonsd., p. 83, sp. aff. *internata* Lonsd., p. 84, Himálayas; DIENER (7 A).
†*Hammia* nov. nom. = *Stigmatopora* Hamm 1881 non Kaup 1853, type species *Ceriopora pustulosa* Gldfs., p. 281.
†*Idmonea alipes*, n. sp., p. 152; GREGORY (9).
†*Inversaria orbicularis*, n. sp., p. 353, *laminata*, n. sp., p. 356; GREGORY (9).
†*Meliceritites lonsdalei*, n. sp., p. 335, *fistulata*, n. sp., p. 337, *parviarmata*, n. sp., p. 340; GREGORY (9).
†*Nodelea cunningtoni*, n. sp., p. 308, *durobrivensis*, n. sp., p. 310; GREGORY (9).
†*Pergensella*, nov. gen., type species *Idmonea geniculata* von Hagenow, p. 208; GREGORY (9).
†*Petalopora cunningtoni*, n. sp., p. 376; GREGORY (9).
†*Proboscina crassa* (Röm.) var. *alectodes*, n. v., p. 38, var. *elevata*, n. v., p. 40, *bohemica*, n. sp., var. *typica*, p. 54, var. *chathamensis*, p. 55; GREGORY (9).
†*Reptoceritites* n. gen. type *Reptoceritites rowei*, n. sp., p. 319, the reptant form of *Meliceritites*; GREGORY (9).
†*Reptomultelea sarissata*, n. sp., p. 322; GREGORY (9).
†*Reptomulticlausa orbignyi*, nov. nom., p. 425; GREGORY (9).
†*Reptomultisparsa rowei*, n. sp., p. 121; GREGORY (9).
†*Reticrisina* n. subgen. type species *Reticulipora obliqua* Orb., 1850, Senonian, p. 176; GREGORY (9).
†*Sparsicavea wrighti*, n. sp., p. 388, *cicatrix*, n. sp., p. 391, *marssoni*, nov. nom., p. 397; GREGORY (9).
†*Stomatopora spicea*, n. sp., p. 20; GREGORY (9).

CHEILOSTOMA.

Chapperia annulus, Manzoni, var. *bilaminata*, n. v., p. 674; WATERS (30).
Cribrilina setosa, n. sp., *balzaci* Sav., Madeira; WATERS (31).
Lepralia pallasiana var. *strumata*, n. var., *peristomata* nov. nom. for *L. mangnevilla* Busk nec Audouin, *mucronelliformis*, n. sp., *contracta*, n. sp., Madeira; WATERS (31).

Membranipora tehuelcha var. *intertuberculata*, n. v., p. 676, *maderensis*, n. sp., p. 677, *californiensis*, n. sp., p. 681, *sculpta* MacG. var. *cucullata*, n. v., p. 685, *incrustans*, nom. nov., p. 686 ; WATERS (30).

M. bursaria MacG. var. *Phillipensis*, n. v., p. 690, *capriensis*, n. sp., p. 690, *elizabethiensis*, n. sp., p. 690 ; WATERS (30).

Membraniporidæ, classification into groups with tabular keys for identification ; WATERS (30).

? *Phylactella punctigera*, n. sp., Madeira ; WATERS (31).

Smittia (*Porella*) *minuta* Norman var. *punctata*, n. var., Madeira ; WATERS (31).

PHYLACTOLÆMA.

Synopses of North American Freshwater Bryozoa ; DAVENPORT (7).

X. CRUSTACEA.

(Including GIGANTOSTRACA AND PANTOPODA.)

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CONTENTS.

INTRODUCTION.

THE Record of *Crustacea* for 1899 shows a considerable falling off in the number of Titles. In 1897 the number of papers published on *Crustacea* exceeded the number now recorded by nearly 70. It is rather difficult to determine in what directions this decline has taken place for the number of new and other species described shows no signs of a corresponding diminution. Comparison of the work of individual specialists of eminence will show at once that many of them have published considerably fewer papers than in previous years. Thus COUTIÈRE, whose publications on *Alpheidæ* are usually numerous, has this year confined himself to the publication of a valuable monograph on the group, in which he treats of its Morphology, Larval Forms, and Bionomics, the whole forming an important addition to his systematic papers.

ALCOCK has continued his "Materials for a Carcinological Fauna of India," but by far the most important work from his pen in 1899 was "An Account of the Deep Sea *Brachyura* collected by the Investigator." The work is illustrated by some beautiful plates rendered doubly interesting by being the work of Indian native artists.

SARS, continuing his admirable *Crustacea* of Norway, has completed the second volume, on the *Isopoda*, and commenced the third, dealing with *Cumacea*. This work promises, when finished, to be one of the most completely illustrated works on *Crustacea* in existence. It is impossible to praise too highly so lucid a publication. The same author adds one more to the list of his papers on South African *Phyllopoda*.

JONES & WOODWARD bring their monograph on British Palæozoic *Phyllopoda* to a conclusion.

Another useful piece of work is BASSETT-SMITH'S "Systematic Account of the *Copepoda* parasitic on Fishes." Here the author diagnoses all known genera and gives a list of species and their hosts under each genus. No attempt is made to give diagnoses of the individual species but a full list of references to already published descriptions is given under each.

A somewhat scanty list of physiological papers includes a few of interest. KEEBLE & GAMBLE on the "Physiology of Colour change in *Hippolyte varians*" should be read, as also should PARKER'S paper on "The Photo-mechanical changes in the Retinal Pigment of *Gammarus*," and STOLLER'S "Organs of Respiration of the *Oniscidæ*." LANGELAAN discusses the rôle of the Crustacean Blood Corpuscles in Phagocytosis and MACBRIDE has written a short paper on the movements of Copepods.

NUSBAUM, whose previous papers on the Crustacean Nervous System have been referred to in other volumes of the Record, adds yet another to their number.

GRUVEL'S study of the complemental male of *Scalpellum* will doubtless be found of interest to all students of *Cirripedia*, and RICHARD'S lengthy and interesting article on the Parasites and Commensals of *Crustacea* should appeal to all interested in the Bionomics of the Class. Parasitic *Copepoda* always come in for a large share of attention. Besides BASSETT-SMITH'S paper referred to above, several others will be found in the list of Titles, including one by SCHIMKEWITSCH on the Development of Parasitic *Copepoda*. WAITE'S "Antennal gland of *Homarus*," and WARREN'S "Inheritance of Parthenogenesis in *Daphnia*" are both worthy of consideration. BJELOOUSSOW'S paper on Digestion in *Crustacea* may also be referred to.

ORTMANN continues his account of the *Decapoda* in Bronn's Thierreich.

STEBBING, in preparing the way for the publication of the *Amphipoda* volume of Das Tierreich, has announced a number of changes in the

nomenclature of this group. It is interesting to note in all sections of this work hitherto published the great number of generic names used in more than one group of animals. Das Tierreich should prove of the greatest use in solving to some extent those nomenclature difficulties so well known to all Zoologists.

The Illinois Laboratory has given us two more useful papers, SHARPE's account of the North American *Ostracoda* and FORBES' North American Freshwater *Cyclopidæ*. HARRIET RICHARDSON's "Key to the Isopods of North America" will be found useful by American students of the group.

BRADY's account of the Marine *Copepoda* of New Zealand and THOMSON's revision of the *Anomura* of the same country constitute useful additions to the literature of Australasian *Crustacea*. Other systematic works, numerous and in some cases lengthy, need not be referred to here in detail, except HANSEN's account of the *Cladocera* and *Cirripedia* of the Plankton Expedition which should not be passed over in silence.

The Record of *Gigantostraca* remains of about normal length. The *Pantopoda* come in for a larger share of attention this year.

I. TITLES.*

[For GIGANTOSTRACA, see p. 34; for PANTOPODA, p. 37.]

N.B. The following special abbreviations are used in this Record.

Miscell. biol. **= Miscellanées biologiques dediées au Professeur Alfred Giard à l'occasion du xxve anniversaire de la fondation de la station zoologique de Wimereux 1874–1899.**

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II. BIOLOGY.

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External characters, structure of body, generative apparatus, nervous system and cement glands of complemental male of *Scalpellum vulgare*; Gruvel (53).

Gastric Teeth of *Dithyrocaris*, p. 194; Jones & Woodward (65).

Morphology of the rudimentary feet of *Copepoda*; van Douwe, p. 447, Zool. Anz. xxii: External and Internal Morphology of the *Alpheidæ*; Coutière (39): Morphology of *Hemioniscus balani*, p. 770; Caullery & Mesnil, C. R. Ac. Sci. cxxix.

Structure of Antennal Glands in *Homarus americanus*; Waite (124).

2. Physiology.

Movements of Copepoda; MacBride (75).

Digestion and absorption in Decapoda; Bjelooussow (12): Functions of Gastric gland in Decapoda; MacMunn (76): Function of the Mid-gut of Isopoda, p. 67; McMurrich, Zool. Anz. xxii.

Blood corpuscles of Decapoda in phagocytosis; Langelaan (70).

Changes in the Retinal Pigment of *Gammarus*; Parker (94).

Organs of respiration of the Oniscidæ, Physiology of; Stoller (116).

Innervation of the Vascular System and Sub-Epidermal Nerve Cells; Nusbaum (89).

Variation in colour, etc., in *Hippolyte varians*, *gracilis* and *fascigera*, p. 147; Walker, Ann. Nat. Hist. (vii) iii: Colour change in *Hippolyte varians*; Keeble & Gamble (67): Chromatophores in *Hippolyte varians*; Keeble & Gamble (67).

Epidermal growth on a Whale caused by *Coronula*; Weltner (130).

3. Development incl. Embryology.

Development of *Palæmon olfersi*, p. 24; Aurivillius, Bih. Svenska Ak. xxiv, iv: Development of parasitic *Copepoda*; Schimkewitsch, Zool. Anz. xxii, p. 111: Development of the Antennal Glands in *Homarus americanus*; Waite (124).

Hatching-stage of Pagurine Land Crabs; Borradaile, P. Z. S. 1899, p. 937.

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4. Habits, Commensalism, &c.

Bionomics of the *Alpheidæ*; Coutière (39).

Struggle between a Spider and Ichneumon Fly; Wake, J. Northampt. Soc. x, p. 114.

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Parasites and Commensals of *Crustacea*; RICHARD (96).
A new Hermit Crab exhibiting adaptive commensalism with a Sea-anemone, p. 111; ALCOCK, J. Asiat. Soc. Bengal lxviii.

5. EVOLUTION and DISTRIBUTION.

Phylogeny of the *Alpheidæ*; COUTIÈRE (39).
Evolution of *Hemioniscus balani*; CAULLERY & MESNIL (30).
Geographical Evolution of *Limnothelphusa*, n. g., p. 702; CUNNINGTON, P. Zool. Soc. London 1899.
Resemblance between *Crustacea* of Arctic and Antarctic regions; THOMPSON (118).

6. TAXONOMY AND CLASSIFICATION.

Analytical keys of various families of N. American Isopods; RICHARDSON (97).
Classification of the *Dromiacea*, p. 123; ALCOCK, J. Asiat. Soc. Bengal lxviii.
Classification of the *Brachyura Cyclometopa*; ALCOCK (2).
Discussion of Species of Genus *Cerataspis*; BONNIER (13).
Systematic position and generic characters of the *Alpheidæ*; COUTIÈRE (39).
Identity of *Thalamita prymna*, *crenata*, *danæ*, *stimpsoni* and *picta*, p. 76; ALCOCK (2).
Changes in nomenclature of families of *Amphipoda*, pp. 210 & 211; STEBBING, Ann. Nat. Hist. (vii) iv.

III. DISTRIBUTION.

1. LAND AND FRESHWATER FORMS.

Palæarctic Region.

i. NEW SPECIES.

Franz-Josef Land; 3 n. spp. of *Ostracoda* and n. sp. of *Copepoda*; SCOTT (106).
Brandenburg: *Ostracoda*, n. sp. of *Candona*; HARTWIG (57), n. sp. of *Candona*; HARTWIG (58): n. sp. of *Candona*; HARTWIG (59).
Switzerland, Lakes: *Cladocera*, 2 n. spp.; BURCKHARDT (24).
Madeira: n. sp. of *Lucasius*; NORMAN (82).

ii. LOCAL FAUNÆ.

Franz-Josef Land: *Crustacea*; SCOTT (106).
Northern Europe: Table of distribution of Land Isopoda, p. 78; NORMAN (83).
Aberdeenshire: *Entomostraca*; SCOTT (106).—Galway: *Isopoda*; CHILTON, Irish Natural. viii, p. 115.—Essex: *Isopoda* (*Porcellio ratzburgi*); WEBB (129).—Dundrun, Co. Dublin: *Porcellio dilatatus*; SCHARFF, Irish Natural. viii, p. 60.
Throndhjem: *Oniscoida*; STORM (117).
Müggel See: *Crustacea*; HARTWIG (56).

Petrosawodsk: *Cladocera*; LINKO (72).
Roumania: *Isopoda*; DOLLFUS in JAQUET (64).
Madeira: Land Isopoda; NORMAN (82).

Ethiopian Region.

i. NEW SPECIES.

Darcey, Gold Coast: *Isopoda*, n. sp. of *Cœcosphæroma*; DOLLFUS (45).
Cameroons: n. sp. of *Palæmonetes*, n. sp. of *Palæmon*, n. sp. of *Gebia*; AURIVILLIUS (8).
Lake Tanganyika: n. g. of *Brachyura*; CUNNINGTON (40): n. g. of *Atyidæ* and n. sp. of *Palæmon*; CALMAN (28).
Somaliland: n. sp. of *Apus*; BOUVIER (16).
S. Africa: *Phyllopoda*, 3 n. spp. of *Apus* and n. sp. of *Streptocephalus*; SARS (101).

ii. LOCAL FAUNÆ.

Africa: *Cladocera*; WELTNER (130).
Cameroons: *Crustacea*; AURIVILLIUS (8).
S. Africa: *Phyllopoda*; SARS (101).

Oriental Region.

i. NEW FORMS.

Ceylon: *Cladocera*, 13 n. spp., *Copepoda*, 1 n. sp., *Ostracoda*, 4 n. spp.; DADAY (41).
Borneo: *Brachyura*, 11 n. spp.; DE MAN (42).

ii. LOCAL FAUNA.

Ceylon: *Cladocera*, *Copepoda*, *Ostracoda*; DADAY (41).

Neotropical and Nearctic Regions.

i. NEW FORMS.

N. America: 12 n. spp. of *Ostracoda*; SHARPE (108).

ii. LOCAL FAUNÆ.

N. America: *Cyclopidæ*; FORBES (49).—*Cytheridæ* and *Cyprididæ*; SHARPE (108).
Argentina: *Macrura*; BERG (10).
Brazil: *Decapoda*; NOBILI (88).

2. MARINE FORMS.

Arctic and Antarctic.

Arctic and Antarctic Regions: *Cirripedia*; WELTNER (130).

Atlantic Ocean.

i. New Species.

Atlantic: 2 n. spp. and n. g. of *Amphipoda*; Chevreux (31 & 32).
Franz-Josef Land: n. sp. of *Ostracoda* and 5 n. spp. of *Copepoda*; Scott (106).
Great Britain: *Pereionotus testudo*; Norman (85).
Sea of Antilles and Gulf of Mexico: 3 n. spp. of *Palicus*; Edwards & Bouvier (48).
Guiana: *Copepoda*, *Gyropeltis*, 3 n. spp.; Bouvier (17).

ii. Local Faunæ.

Franz-Josef Land: *Crustacea*; Scott (106).
Great Britain: *Pandalidæ*; Calman (26).—*Isopoda chelifera*; Norman (84).
Norway: *Cumacea* and *Isopoda*; Sars (99).
Jamaica: Addition to the Fauna; Rathbun, p. 628, J. Inst. Jamaica ii.
St Thomas (Antilles): *Decapoda* and *Stomatopoda*; Nobili (87).
Martinique: *Decapoda*; Doflein (44).
Tres Marias Is.: *Decapoda*, 4 spp.; Rathbun (95).

Mediterranean Seas.

i. New Species.

Bay of Naples: n. sp. of *Jæropsis*; Norman (86).
Bosphorus: 8 n. spp. of *Amphipoda*; Sowinsky (110).
Sea of Azov: *Amphipoda*, n. sp. of *Gammarus* and n. sp. of *Corophium*; Sowinsky (109).

ii. Local Faunæ.

Adriatic: *Crustacea*; Condorelli (38).
Sea of Marmora: *Decapoda*; Birula (11).
Bosphorus; *Amphipoda* and *Isopoda*; Sowinsky (110).
Sea of Azov: *Malacostraca*; Sowinsky (109).

Indian Ocean.

i. New Species.

Indian Seas: a number of n. spp. and n. gg.; Alcock & Anderson (5).
Somaliland: *Crustacea*, 3 n. spp.; Pavesi in Robecchi Bricchetti (98).

ii. Local Faunæ.

Indian Seas: Deep Sea Crustacea; Alcock & Anderson (5).
W. Africa (Portuguese): Crustacea; Osorio (93).

Pacific Ocean.

i. New Species.

N. America (Pacific coast): 22 n. spp. of *Isopoda*; Richardson (97).
Aleutian Is.: 4 n. spp. of *Isopoda*: Richardson (97).

California: n. g. and 17 n. spp. of *Isopoda*; RICHARDSON (97).—Lower California: *Decapoda* incl., 2 n. spp. of *Eupagurus*, n. sp. of *Calcinus*, 2 n. spp. of *Clibanarius*, 2 n. spp. of *Hypoconcha*; BOUVIER (20).
Rio Tocantin: 2 n. spp. of *Cladocera*; HANSEN (54).
Hong Kong: Crustacea, n. sp. of *Dioxippe*; KOELBEL (69).
Sandal Bay, Lifu: *Caprellidæ*, n. sp. of *Metaprotella*; MAYER (79).
New Zealand: 4 n. gg. and 69 n. spp. of *Copepoda*; BRADY (21).—Dunedin: *Amphipoda*, n. sp. of *Hyale*, p. 206; THOMSON (120).—Wellington: n. g. of *Anomura*; THOMSON (119).

ii. LOCAL FAUNÆ.

Pacific: *Cirripedia*; WELTNER (133).
N. America: *Isopoda*; RICHARDSON (97).
Monterey Bay, California: *Decapoda*; DOFLEIN (44).
S. America: *Decapoda*; DOFLEIN (44), p. 185.
E. Asia: *Crustacea*; KOELBEL (69).
New Zealand: *Anomura*; THOMSON (119): Marine *Copepoda*; BRADY (21): *Orchestidæ*; THOMSON (120).

3. FOSSIL FORMS.

Palæozoic, Gt. Britain: *Phyllopoda* incl. 5 n. spp. and 2 n. g.; JONES & WOODWARD (65).
Cambrian, Kennebecasis Valley, Canada: 3 n. spp. of *Ostracoda*; MATTHEW (78).
Etcheminian, Newfoundland: *Crustacea*; MATTHEW (77).
Silurian, Scotland: *Crustacea*, p. 659; PEACH & HORNE, Silurian Rocks of Britain, Vol. I, in Mem. geol. Surv. U. K.—Podolia: *Ostracoda*; VENYUKOW (122).—Lower Silurian, Brittany: n. g. of *Phyllopoda*; JONES & WOODWARD (66).
Devonian, S. Indiana and C. Kentucky: *Entomostraca*; KINDLE, Bull. Amer. Pal. xii, p. 85.
Permian, Frankfurt on the Maine: *Phyllopoda*, n. sp. of *Estheriina*; JONES & WOODWARD (66).
Upper Limestone, Linn, S. W. of Glasgow: *Phyllopoda*, n. sp. of *Lebescontia* (n. g.); JONES & WOODWARD (66).
Tertiary, Mecklenburg: *Ostracoda*; LIENENKLAUS (71).
Eocene, Oullins, Lyon: *Ostracoda*; FOURTAU (50).
Miocene, Panama: n. sp. of *Calappa*; BOUVIER (19).

4. PARASITIC FORMS.

On Fish: *Crustacea*; BRIAN (22): *Copepoda*; BASSETT-SMITH (9).

IV. SYSTEMATIC.†

The following papers deal with *Crustacea* generally:—ANON. (7); AURIVILLIUS (8); PAVESI in ROBECCHI BRICCHETTI (98); SOWINSKY (109 & 110); STEBBING (112).

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† This sign when prefixed to a quotation indicates a fossil form or forms.

MALACOSTRACA.

PODOPHTHALMA.

DECAPODA.

The following papers deal with *Decapoda*:—ALCOCK (1–4), ALCOCK & ANDERSON (5), BERG (10), BIRULA (11), BJELOOUSSOW (12), BOUVIER (18–20), CALMAN (26 & 28), COUTIÈRE (39), CUNNINGTON (40), DE MAN (42), DOFLEIN (44), EDWARDS & BOUVIER (48), HAY (62), KINGSLEY (68), NOBILI (87 & 88), ORTMANN (92), RATHBUN (96), STEAD (111), THOMSON (119 & 120).

For diagnoses of the genera of *Alpheidæ*, see p. 323; COUTIÈRE (39).

Acanthodromia margarita, Andaman Sea, p. 134; ALCOCK, J. Asiat. Soc. Bengal lxviii.

Achelous, subg. of *Neptunus*, q. v.

Alpheus shearmii, Indian Seas, p. 283; ALCOCK & ANDERSON, Ann. Nat. Hist. (vii) iii, n. sp.

Amphitrite, subg. of *Neptunus*, q. v.

Aniculus, g. defined, *typicus*, distribution in New Zealand, p. 184; THOMSON, Tr. N. Zealand Inst. xxxi.

†*Anthrapalæmon glaber*, Coal Measures, Kilmaurs, Ayrshire, p. 393, pl. xv, fig. 5; JONES & WOODWARD, Geol. Mag. iv, vi.

Arachnodromia, g. defined, p. 130, *baffini*, p. 131, description and distribution in India; ALCOCK, J. Asiat. Soc. Bengal lxviii. *A.*, g. defined, p. 17, *baffini*, from Travancore Coast, p. 19, pl. ii, fig. i; ALCOCK, Deep Sea Brachyura coll. by Investigator.

A. baffini, Travancore Coast, described and stated to belong possibly to a new genus, p. 7; ALCOCK & ANDERSON, Ann. Nat. Hist. (vii) iii, n. sp.

Atya margaritacea, var. *claviger*, nov., Cameroons, described, p. 14, pl. iii, figg. 5–8; AURIVILLIUS, Bih. Svenska Ak. xxiv, iv.

Benthesicymus investigatoris, Indian Seas, p. 282; ALCOCK & ANDERSON, Ann. Nat. Hist. (vii) iii, n. sp.

Benthochascon, n. g. defined for *hemingi*, Andaman Sea, described, p. 10; ALCOCK & ANDERSON, t. c., n. sp.

B. g. defined, p. 68, *hemingi*, Andaman Sea, p. 69, pl. iii, fig. 2; ALCOCK, Deep Sea Brachyura coll. by Investigator, description also, p. 15; ALCOCK, J. Asiat. Soc. Bengal lxviii.

Brachynotus penicillatus, p. 712, pl. i, figg. 5 & 6, *sanguineus*, p. 712, pl. i, fig. 7, East Asia; KOELBEL, in COUNT SZÉCHENYI'S "Keletarzsiai utjának tudomanyos Eredmenye."

Calappa, g. defined, p. 20, *exanthematosa*, Bay of Bengal, p. 21; ALCOCK, Deep Sea Brachyura coll. by Investigator.

†*C. zurcheri*, Miocene of Panama, p. 189, described; BOUVIER, Bull. Mus. Paris 1899, n. sp.

Calastacus felix, Indian Seas, p. 287; ALCOCK & ANDERSON, Ann. Nat. Hist. (vii) iii, n. sp.

Calcinus californiensis, San José Is., p. 380, described; BOUVIER, Bull. Mus. Paris 1898, n. sp.

Callianassa lignicola, Indian Seas, p. 288; ALCOCK & ANDERSON, Ann. Nat. Hist. (vii) iii, n. sp.

Campatopsis, n. g., defined (closely allied to *Xenophthalmodes*) for *rubida*, Andaman Sea, 3 ♂♂ described, p. 13; ALCOCK & ANDERSON, t. c., n. sp.

C., g. defined, p. 75, *rubida*, Andaman Sea, p. 76, pl. iv, fig. 3; ALCOCK, Deep Sea Brachyura coll. by Investigator.

Carcinoplax, g. defined, p. 70, *longipes*, Andaman Sea, p. 71 = *Nectopanope longipes*, Wood Mason; ALCOCK, t. c.

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Cerataspis petiti, pl. iii, figg. 1–4, *monstrosa*, pl. iii, figg. 5–13, iv, figg. 1–11, v, figg. 1–5, vi, figg. 1–4, figured and discussed in article, p. 27; BONNIER, Miscell. Biol.

Euxynomysis mecznikowi, Sea of Azov, p. 385, pl. iv, figg. 12–16; SOWINSKY, Bull. Ac. St. Petersb. viii.

Mesomysis ulskii, Sea of Azov, described, p. 380, pl. iv, figg. 6–9, *kowalewskii*, p. 383, table comparing these two spp., p. 383, *intermedia*, Sea of Azov, p. 384, pl. iv, figg. 10 & 11; SOWINSKY, t. c.

Paramysis baeri, Sea of Azov, described, p. 377, pl. iii, figg. 4–13, iv, figg. 4 & 5; SOWINSKY, t. c.

Siriella frontalis, reputed occurrence in British Seas, p. 151; HOLT & BEAUMONT, Ann. Nat. Hist. (vii) iii.

Thysanoessa longicaudata, occurrence in the Firth of Forth, p. 56; SCOTT, Ann. Scott. Nat. Hist. 1899.

STOMATOPODA.

(Vacant.)

EDRIOPHTHALMA.

CUMACEA.

The following Memoir deals with *Cumacea*:—SARS (99).

Cuma, g. defined, *scorpioides*, p. 10, pls. i, ii & iii, *edwardsii*, p. 12, pl. iii, described; SARS, Crust. Norway iii.

Cyclaspis, g. defined, p. 15, *longicaudata*, p. 16, pls. vii & viii, described; SARS, t. c.

Hemilamprops, g. defined, p. 21, *rosea*, p. 22, pls. xii–xiv, *assimilis*, p. 23, pl. xv, *uniplicata*, p. 24, pls. xvi & xvii, described; SARS, t. c.

Iphinoë, g. defined, p. 12, *trispinosa*, p. 14, pls. v & vi, described; SARS, t. c. *I. gracilis*, var. *mæotica*, Sea of Azov, described, p. 374, pl. iii, fig. 4; SOWINSKY, Bull. Ac. St. Petersb. viii.

Lamprops, g. defined, p. 18, *fasciata*, described, p. 19, pls. ix & x, *fuscata*, described, p. 20, pl. xi; SARS, Crust. Norway iii.

Pseudocuma graciloides, p. 376, pl. iv, figg. 5 & 6; *pectinata*, p. 376, *sowinskii*, p. 377, Sea of Azov, described; SOWINSKY, Bull. Ac. St. Petersb. viii.

ISOPODA AND ANISOPODA.

The following papers are concerned with these Groups:—CAULLERY & MESNIL (30), CHILTON (33 & 34), DOLLFUS (45), JAQUET (64), MIETHE (81), NORMAN (82–86), RICHARDSON (97), SARS (99), STORM (117).

Ægа lecontii, described, p. 167, fig. 5, RICHARDSON, Ann. Nat. Hist. (vii) iv.

Alloniscus perconvexus, figured, p. 332, fig. 34, RICHARDSON, t. c.

Anilocra occidentalis, Monterey Bay, California, described, p. 172, fig. 7; RICHARDSON, t. c. n. sp.

Apseudes latreillii, discussion of the species, p. 327; NORMAN, op. cit. iii.

Arcturus intermedius, Kyska Harbour, Aleutian Islands, described, p. 275, fig. 28; RICHARDSON, op. cit. iv, n. sp.

Armadillidium depressum, described, p. 76, pl. vi, figs. 9–12; NORMAN, op. cit. iii.

Armadillium nitidum, Somaliland, p. 699; PAVESI, in ROBECCHI BRICCHETTI'S "Somali e Benadir," n. sp.

Munna kröyeri, occurrence, Franz-Josef Land, p. 67, pl. iii, figg. 12–14, *fabricii*, occurrence, Franz-Josef Land, p. 67, pl. iii, figg. 10 & 11; SCOTT, J. Linn. Soc. xxvii.

Munnoniscus, g. defined, p. 240, *marsupialis*, described, p. 241, pl. xcix, fig. 2; SARS, Crust. Norway ii.

Peryscyphis nigromaculatus, Somaliland, p. 699; PAVESI in ROBECCHI BRICCHETTI "Somali e Benadir," n. sp.

Porcellidium nasutum, described, from Somerset, p. 75, pl. vi, figg. 5–8; NORMAN, Ann. Nat. Hist. (vii) iii.

Porcellio dilatatus, occurrence at Dundrun, Co. Dublin, p. 60; SCHARFF, Irish Natural. viii. *P. ratzburgi*, occurrence in Essex, first recorded occurrence in Gt Britain, p. 127; WEBB, Essex Natural. xi.

Pleurogonium spinosissimum, occurrence, Franz-Josef Land, p. 67, pl. iii, fig. 15; SCOTT, J. Linn. Soc. xxvii.

Pseudotanais forcipatus, occurrence at Franz-Josef Land, p. 66, pl. iii, figg. 8 & 9; SCOTT, t. c.

Rocinela tuberculosa, figured, p. 170, fig. 6; RICHARDSON, Ann. Nat. Hist. (vii) iv.

Serolis carinata, figured, p. 187, fig. 19; RICHARDSON, t. c.

Sphæroma romburum, p. 179, fig. 12, *octoneum*, p. 180, fig. 13, Monterey Bay, California, described; RICHARDSON, t. c. n. spp.

Synidotea picta, Maxilliped figured, p. 269; RICHARDSON, t. c.

Syscenus infelix, remarks, p. 247, suppl. pl. i; SARS, Crust. Norway ii.

Tanais alascensis, Kryska Harbour, Alaska, described, p. 159, fig. 1; RICHARDSON, Ann. Nat. Hist. (vii) iv, n. sp.

Tecticeps alascensis, figured, p. 181, fig. 14; RICHARDSON, t. c.

T. convexus, Monterey Bay, California, described, p. 182, fig. 15; RICHARDSON, t. c. n. sp.

Typhlotanais finmarchicus, Franz-Josef Land, notes, p. 65, pl. iii, figg. 5–7; SCOTT, J. Linn. Soc. xxvii.

AMPHIPODA.

Memoirs treating of *Amphipoda* are:—CHEVREUX (31 & 32), STEBBING (113–115), WALKER (126).

Alicella, n. g. for *gigantea*, Atlantic, p. 154, figg. in text; CHEVREUX, Bull. Soc. zool. France xxiv, n. sp.

Amathilla pinguis, occurrence, Franz-Josef Land, p. 79, pl. vii, figg. 14 & 15; SCOTT, J. Linn. Soc. xxvii.

Biancolina cuniculus, nom. nov. for *Amphithoë cuniculus* = *Biancolina algicola*, p. 350; STEBBING, Ann. Nat. Hist. (vii) iii.

Carolobatea, n. g., with *Halimedon schneideri* as type species, defined, p. 208; STEBBING, op. cit. iv.

Ceina egregia, N. Zealand, diagnosis, p. 207; THOMSON, Tr. N. Zealand Inst. xxxi.

Cheirocratus sunderwalli, Bosphorus, p. 482, pl. xi, figg. 1–9; SOWINSKY, Zapiski Kiev. Obshch. xv, n. sp.

Corophium mæoticum, Sea of Azov, p. 362, pl. 1, figg. 1–5; SOWINSKY, Bull. Ac. St. Petersb. viii, n. sp.

Cyclocaris guilemi, Atlantic, described, p. 148, figg. in text; CHEVREUX, Bull. Soc. zool. France xxiv, n. sp.

Dexamine spinosa, Bosphorus, p. 490, pl. xii, figg. 5 & 6; SOWINSKY, Zapiski Kiev. Obshch. xv.

Erichthonius abditus, description, p. 458; SOWINSKY, t. c.

Euandania, n. g., with *Andania gigantea* as type species, defined, p. 206; STEBBING, Ann. Nat. Hist. (vii) iv.

Exædiceros, n. g., with *Œdicerus fossor* as type species, defined, p. 208; STEBBING, t. c.

Gammarus robustoides, Sea of Azov, described, p. 365, pls. i, figg. 6–15, & ii, figg. 1–3, *crassus*, Sea of Azov, p. 368, pl. ii, figg. 4–6; SOWINSKY, Bull. Ac. St. Petersb. viii.

G. sarsii, Sea of Azov, p. 369, pls. ii, figg. 7–16, & iii, figg. 1–3; SOWINSKY, t. c. n. sp.

Hoplonyx similis, Franz-Josef Land, p. 70, pl. ix, figg. 11–13; SCOTT, J. Linn. Soc. xxvii.

Hyale prevostii, p. 204, *pontica*, p. 205, *lubbockiana*, p. 206, New Zealand, synonymy and diagnoses; THOMSON, Tr. N. Zealand Inst. xxxi.

H. chiltoni, Dunedin, p. 206; THOMSON, t. c. n. sp.

Hyalella mihiwaha, N. Zealand, diagnosis, p. 207; THOMSON, t. c.

Ischryocerus constantinopolitanus, Bosphorus, p. 463, pl. viii, figg. 17–25; SOWINSKY, Zapiski Kiev. Obshch. xv.

Jassa, discussion of the genus, p. 237; STEBBING, Ann. Nat. Hist. (vii) iii, WALKER, p. 394, t. c.

Lætmatophilus tuberculatus, Bosphorus, p. 451, pl. viii, figg. 1–8, description and figures; SOWINSKY, Zapiski Kiev. Obshch. xv.

Leipsuropus, n. g. proposed for *Cyrtophium parasiticum*, Haswell, p. 241; STEBBING, Ann. Nat. Hist. (vii) iii.

Leptocheirus cornu-aurei, Bosphorus, p. 470, pl. ix, figg. 9–22; SOWINSKY, Zapiski Kiev. Obshch. xv, n. sp.

L. dellavallei, nom. nov. for *pilosus*, Della Valle, p. 350; STEBBING, Ann. Nat. Hist. (vii) iii.

Leucothoe crassimana, Bosphorus, p. 492, pl. xi, figg. 20–22, xii, figg. 7, 8; SOWINSKY, Zapiski Kiev. Obshch. xv.

Melita fucicola, Bosphorus, p. 486, pl. xi, figg. 10–19, xii, figg. 1–4; SOWINSKY, t. c.

Mesopleustes, n. g., with *Pleustes abyssorum* as type species, defined, p. 209; STEBBING, Ann. Nat. Hist. (vii) iv.

Metaprotella sandalensis, Sandal Bay, Lifu, described and figured, p. 53; MAYER, Willey's Zool. Res. i, n. sp.

Microdeutopus haswelli, nom. nov. for *chelifer*, *M. australis* transferred to *Lemboides*, p. 350; STEBBING, Ann. Nat. Hist. (vii) iii.

Microjassa, n. g. proposed for *Podocerus cumbrensis*, defined, p. 240; STEBBING, t. c.

Orchestia gammarellus, p. 198, *chiliensis*, p. 199, *telluris*, p. 200, *aucklandiæ*, p. 201, *quoyana*, p. 202, *tumida*, *sylvicola*, p. 203, New Zealand, synonymy and definitions; THOMSON, Tr. N. Zealand Inst. xxxi.

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Paracalliope, n. g. for *Calliope fluviatilis*, identical with *Pherusa australis*, defined, p. 210; STEBBING, Ann. Nat. Hist. (vii) iv.

Paracorophium, n. g. for *Corophium excavatum*, p. 241 and p. 350; STEBBING, op. cit. iii, 1899.

Paracyproidea, n. g., with *Cyproidea lineata* as type species, defined, p. 207; STEBBING, op. cit. iv.

Paraleptamphopus, n. g., defined for *Calliope subterranea* and *Pherusa cærulea*, p. 209; STEBBING, t. c.

Paraleucothoe, n. g., with *Leucothoe novæ-hollandiæ* as type species, defined, p. 208; STEBBING, t. c.

Paradexamine, n. g. for *Dexamine pacifica*, defined, p. 210; STEBBING, t. c.

Parandania, n. g. defined, type species = *Andania boecki*, p. 206; STEBBING, t. c.

Paratryphosites, n. g. defined, for *Lysianassa abyssi*, p. 206; STEBBING, t. c.

Parhipinia, n. g., with *Phoxus villosus* as type species, defined, p. 207; STEBBING, t. c.

Paropisa, n. g. defined. Type species = *Opisa hispana*, p. 206; STEBBING, t. c.

Pereionotus testudo, occurrence on British Coast, p. 288, pl. v, figg. 1 & 1*a*; NORMAN, t. c.

Photis tenuicornis, Franz-Josef Land, p. 80, pl. vii, figg. 16 & 17; SCOTT, J. Linn. Soc. xxvii.

Podoceropsis megacheir, Bosphorus, description and figure, p. 466, pl. ix, figg. 1–8; SOWINSKY, Zapiski Kiev. Obshch. xv.

Podocerus falcatiformis, Bosphorus, p. 461, pl. viii, figg. 9–16; SOWINSKY, t. c. n. sp.

P., discussion of the genus; STEBBING, p. 237, Ann. Nat. Hist. (vii) iii; WALKER, p. 394, t. c.

Protomedeia ostroumowi, Bosphorus, p. 475, pl. x, figg. 1–19; SOWINSKY, Zapiski Kiev. Obshch. xv, n. sp.

Tryphosa antennipotens, identical with *Uristes gigas*, p. 211; STEBBING, Ann. Nat. Hist. (vii) iv.

Tetradeion, n. g., with *Cyproidia crassa* as type species, defined, p. 207; STEBBING, t. c.

Siphonœcetes dellavallei, n. name for *S. typicus*, Kröyer, p. 241; STEBBING, op. cit. iii.

Stenothoe bosphorana, Bosphorus, p. 493, pl. xi, figg. 23–25, xii, figg. 9–19, sp. (?), Bosphorus, p. 497, pl. xiii, figg. 1–10; SOWINSKY, Zapiski Kiev. Obshch. xv, n. spp.

Stomacontion, n. g. defined with *Acontiostoma pepinii* (= *A. kergueleni*) for type species, p. 205; STEBBING, Ann. Nat. Hist. (vii) iv.

Sympleustes, n. g., with *Amphithoe latipes* and *glaber*, *Amphithopsis pulchella*, *olrikii*, and *grandimana*, defined, p. 209; STEBBING, t. c.

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(Vacant.)

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BRANCHIOPODA.

Consult BOUVIER (16), JONES & WOODWARD (65 & 66), SARS (101).

Apus bottegoi, Somaliland, p. 573; BOUVIER, Ann. Mus. Genova xxxix. *A. somalicus*, Somaliland, p. 700; PAVESI, in ROBECCHI BRICCHETTI'S "Somali e Benadir." *A. namaquensis*, Namaqualand, p. 6, pl. i, figg. 1–8, *sculleyi*, Namaqualand, p. 12, pl. i, figg. 9–13, *trachyaspis*, Port Elizabeth, p. 15, pl. ii, figg. 1 & 2, described; SARS, Arch. Naturv. Christian. xxi, No. 4, n. spp.

†*Calyptocaris*, n. g. defined for *striata*, p. 182, pl. xviii, fig. 7; JONES & WOODWARD, British Palæozoic Phyllopoda in Pal. Soc. Mon.

†*C. richteriana*, Palæozoic, p. 183, pl. xxii, fig. 2; JONES & WOODWARD, t. c. n. sp.

†*Chœnocaris*, n. g. for *tenuistriata*, p. 178, pl. xxi, figg. 8–11 f, xxiv, fig. 8, xxxi, fig. 5; JONES & WOODWARD, t. c.

†*C. youngii*, Upper Limestone, Robroyston, near Glasgow, p. 181, pl. xxii, figg. 1 *a–e*; JONES & WOODWARD, t. c. n. sp.

†*Dithyrocaris lateralis*, p. 184, pl. xxiii, figg. 5 & 6, *carbonaria*, p. 190, pl. xxix, figg. 5 & 6, *kochi*, p. 191, pl. xxix, figg. 7 & 8, *breviaculeata*, p. 191, pl. xxix, fig. 9, *kayseri*, p. 192, caudal ends described, *belli*, p. 177, pl. xviii, figg. 8 *a–c*; JONES & WOODWARD, t. c.

†*D. dunnii*, Calciferous Sandstone, Cannobie, p. 186, pl. xxiii, figg. 9 & 10, xxix, figg. 1 & 2, *neilsoni*, E. Kilbride, p. 187, pl. xxix, figg. 3 *a–c*; JONES & WOODWARD, t. c. n. spp.

†*Echinocaris whidbornei*, Devonian, Barnstaple, p. 393, pl. xv, fig. 6; JONES & WOODWARD, Geol. Mag. iv, vi.

†*Estheriina extuberata*, Permian, Frankfort-on-the-Main, p. 394, pl. xv, fig. 7; JONES & WOODWARD, t. c. n. sp.

†*Hibbertia*, n. g. for *orbicularis*, Coal Measures, Burdiehouse, p. 390, pl. xv, fig. 4; JONES & WOODWARD, t. c. and p. 205, pl. xxv, figg. 8 *a* & 8 *b*; JONES & WOODWARD, British Palæozoic Phyllopoda in Pal. Soc. Mon. n. sp.

†*Lebescontia*, n. g. for *ænigmatica*, Lower Silurian, Brittany, p. 199, *occulta*, Upper Limestone, Linn, Dalry, S.W. of Glasgow, p. 203; JONES & WOODWARD, t. c. n. spp.

Leptestheria siliqua, South Africa, described and figured, p. 23, pl. iii; SARS, Arch. Naturv. Christian. xxi, No. 4.

†*Mesothyra neptuni*, p. 192, *oceani*, p. 193, size and characters; JONES & WOODWARD, British Palæozoic Phyllopoda in Pal. Soc. Mon.

†*Rhacura venosa*, p. 188, pl. xxix, fig. 4; JONES & WOODWARD, t. c.

Streptocephalus purcelli, p. 18, pl. ii, figg. 3–5, described; SARS, Arch. Naturv. Christian. xxi, No. 4.

S. dregei, Port Elizabeth, p. 19, pl. ii, figg. 6–10, described; SARS, t. c. n. sp.

CLADOCERA.

Memoirs on *Cladocera*:—BURCKHARDT (25), HANSEN (54), LINKO (72), WELTNER (132).

Alona australis, n. var. *ceylonica*, Ceylon, p. 41, described; DADAY, Suppl. to Termes. Fuzetek xxi.

A. longirostris, p. 34, *macronyx*, p. 35, *macrops*, p. 38, *globulosa*, p. 37, *punctata*, p. 39, all from Ceylon, described; DADAY, t. c. n. spp.

Alonopsis singalensis, p. 43, *orientalis*, p. 45, Ceylon, described; DADAY, t. c. n. spp.

Bosmina longirostris, *coregoni*, diagnoses, p. 350; BURCKHARDT, Zool. Anz. xxii.

Ceriodaphnia cornuta, Ceylon, forms described, p. 60; DADAY, Suppl. to Termes. Fuzetek xxi.

Chydorus sphæricus, Ceylon, new variety described (*parvus*), p. 25; DADAY, t. c.

C. reticulatus, p. 27, *ventricosus*, p. 28, both from Ceylon, described; DADAY, t. c. n. spp.

Daphnia longispina, *rectifrons*, *hyalina*, diagnoses, p. 350; BURCKHARDT, Zool. Anz. xxii.

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Diaphonosoma brachyurum, diagnosis, p. 349; BURCKHARDT, t. c.

D. singalense, Ceylon, described, p. 62; DADAY, Suppl. to Termes. Fuzetek xxi. *D. fluviatile*, Rio Tocantin, p. 5, pl. i, figg. 2–2 *b*; HANSEN, Clad. Cirrip. Plankton-Exped. n. spp.

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Guernella ceylonica, Ceylon, described, p. 54; DADAY, t. c.
Iliocryptus halyi, Ceylon, described, p. 48; DADAY, t. c.
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Scapholeberis mucronata, Ceylon, described, p. 59; DADAY, t. c.
Sida limnetica, Plankton, Lake Leman, p. 349; BURCKHARDT, Zool. Anz. xxii, n. sp.
Simocephalus elizabethæ, Ceylon, described, p. 61; DADAY, Suppl. to Termes. Fuzetek xxi.

COPEPODA.

The following papers deal with *Copepoda*:—BASSETT-SMITH (9), BOUVIER (17), BRADY (21), BRIAN (22 & 23), CANU (29), CLARK (35), VAN DOUWE (46 & 47), FORBES (49), SARS (100).

Acartia ensifera, Otago Harbour, N. Z., described, p. 33, pl. ix, figg. 8–15; BRADY, Tr. Zool. Soc. London xv, n. sp.
Achtheres, g. defined and spp. enumerated, p. 498; BASSETT-SMITH, P. Zool. Soc. London 1899.
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Anuretes, g. defined and enumeration of spp., p. 457; BASSETT-SMITH, t. c.
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Artotrogus brevicaudatus, Akaroa Harbour, N. Z., described, p. 48, pl. xii, figg. 27–29, xiii, figg. 22–26; BRADY, Tr. Zool. Soc. London xv, n. sp.
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Broteas falcifer, ♂ & ♀ described, p. 6 and plate, *lamellatus*, p. 24, described; SARS, Arch. Naturv. Christian. xxi, No. 2.
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C. longicaudatus, Port Chalmers, N. Z., described, p. 49, pl. xii, fig. 26; BRADY, Tr. Zool. Soc. London xv, n. sp.
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Centromma thomsoni, Otago Harbour, N. Z., provisional name for some imperfect specimens allied to *Paurocope*, p. 47, pl. xiii, figg. 10–17; BRADY, Tr. Zool. Soc. London xv, provisional n. sp.

Centropages discaudatus, Port Chalmers, N. Z., p. 35, pl. x, figg. 1–7, *pectinatus*, Otago Harbour, N. Z., p. 36, pl. ix, figg. 24–27, described; BRADY, t. c. n. spp.

Cestopoda, g. defined and spp. enumerated, p. 507; BASSETT-SMITH, P. Zool. Soc. London 1899.

Charopinus, g. defined and spp. enumerated, p. 498; BASSETT-SMITH, t. c.

Chondracanthus, g. defined and spp. enumerated, p. 491; BASSETT-SMITH, t. c.

Clausocalanus furcatus, Otago Harbour, N. Z., notes, etc., p. 32, pl. ix, figg. 3–7; BRADY, Tr. Zool. Soc. London xv.

Clavella, g. defined and spp. enumerated, p. 473; BASSETT-SMITH, P. Zool. Soc. London 1899.

Colobomatus, g. defined and *bergyltæ* figured, p. 479, pl. xxvi, figg. 5 & 5*a*; BASSETT-SMITH, t. c.

Cybicola, g. defined and spp. enumerated, p. 474; BASSETT-SMITH, t. c.

Cyclops ewarti, distribution, p. 38, pl. x, figg. 15–17; BRADY, Tr. Zool. Soc. Soc. London xv. *C. leuckarti*, p. 31, pl. viii, figg. 1–3, *edax*, p. 33, pl. ix, figg. 1–3, *viridis*, p. 37, pl. x, figg. 1–3, var. *brevispinosus*, p. 41, pl. xi, figg. 1 & 2, var. *insectus*, p. 41, pl. xi, figg. 3–6, *bicuspidatus*, p. 44, pl. xii, figg. 1–4, *albidus*, p. 47, pl. xiii, *ater*, p. 49, pls. xiv & xv, figg. 1–3, *modestus*, p. 51, pl. xv, fig. 4, xvi, figg. 1–3, *serrulatus*, p. 54, pls. xvii & xviii, figg. 1–3, *prasinus*, p. 57, pl. xix, figg. 1 & 2, xx, figg. 1 & 2, *phaleratus*, p. 59, pl. xx, fig. 3, descriptions, synonymy and distribution; FORBES, Bull. Illinois Lab. v. See also *Homocyclops*, inf.

C. brucei, Franz-Josef Land, described, p. 23, pl. vi, figg. 1–6; SCOTT, J. Linn. Soc. xxvii, n. sp.

Cycnus, g. defined and spp. enumerated, p. 475; BASSETT-SMITH, P. Zool. Soc. London 1899.

Dactylopus tenuiremis, p. 105, pl. iii, figg. 1–4, *longirostris*, p. 105, pl. iii, figg. 5–8, *strömi* var. *arcticus* nov., p. 106, pl. v, figg. 11–17, notes etc., SCOTT, J. Linn. Soc. xxvii.

D. hanseni, Lyttleton Harbour, N. Z., described, p. 41, pl. xi, figg. 11–18; BRADY, Tr. Zool. Soc. London xv, n. sp.

Delavalia arctica, Franz-Josef Land, described, p. 98, pl. v, fig. 14, vi, figg. 7–11; SCOTT, J. Linn. Soc. xxvii, n. sp.

Demoleus, g. defined and spp. enumerated, p. 460; BASSETT-SMITH, P. Zool. Soc. London 1899.

Diaptomus singalensis, Ceylon, p. 22, figg. 6*a*–*c*, described; DADAY, Supplement to Termes. Fuzetek xxi, n. sp.

Dichelestium, g. defined and spp. enumerated, p. 473; BASSETT-SMITH, P. Zool. Soc. London 1899.

Dinematura, g. defined and spp. enumerated, p. 463; BASSETT-SMITH, t. c.

Diocus, g. defined and spp. enumerated, p. 495; BASSETT-SMITH, t. c.

Diphyllogaster, n. g. defined for *thompsoni*, on *Dicerobatis giornæ*, p. 55, pl. iii; BRIAN, Atti Soc. Ligustica x, n. sp.

Dysgamus, g. defined and spp. enumerated, p. 460; BASSETT-SMITH, P. Zool. Soc. London 1899.

Echetus, g. defined and spp. enumerated, p. 485; BASSETT-SMITH, t. c.

Echthrogaleus, g. defined and spp. enumerated, p. 464; BASSETT-SMITH, t. c.

Ectinosoma australe, Otago Harbour, described, p. 39, pl. x, figg. 18–25; BRADY, Tr. Zool. Soc. London xv, n. sp.

Elytrophora, g. defined and spp. enumerated, p. 462; BASSETT-SMITH, P. Zool. Soc. London 1899.

Lophura, g. defined and spp. enumerated, p. 486; BASSETT-SMITH, t. c.
Luetkenia, g. defined and spp. enumerated, p. 458; BASSETT-SMITH, t. c.
Marænobiotus vejdovskyi, Franz-Josef Land, Notes and figures, p. 99, pl. vi, figg. 12–17; SCOTT, P. Linn. Soc. xxvii.
Medesicaste, g. defined and spp. enumerated, p. 489; BASSETT-SMITH, P. Zool. Soc. London 1899.
Metridia longa, Franz-Josef Land, occurrence and figures, p. 91, pl. iv, figg. 16 & 17; SCOTT, J. Linn. Soc. xxvii.
Myzopontius pungens, Franz-Josef Land, described, p. 114, pl. ix, figg. 1–10; SCOTT, t. c.
Nemesis, g. defined and spp. enumerated, p. 476; BASSETT-SMITH, P. Zool. Soc. London 1899.
Nessipus, g. defined and spp. enumerated, p. 458; BASSETT-SMITH, t. c.
Nogagus, g. defined and spp. enumerated, p. 459; BASSETT-SMITH, t. c.
Norion, g. defined and spp. enumerated, p. 469; BASSETT-SMITH, t. c.
Oithona similis, Franz-Josef Land, notes and figures, p. 92, pl. iv, figs. 18 & 19; SCOTT, P. Linn. Soc. xxvii.
Oralien, n. g. defined, p. 489, *asellinus*, figured, pl. xxvi, figg. 1–1*c*; BASSETT-SMITH, P. Zool. Soc. London 1899.
Orthocyclops, n. subg. of *Cyclops*, defined, p. 51; FORBES, Bull. Illinois Lab. v.
Pandarus, g. defined and spp. enumerated, p. 466; BASSETT-SMITH, P. Zool. Soc. London 1899.
Paracalanus parvus, figured, p. 32, pl. ix, figg. 1 & 2; BRADY, Tr. Zool. Soc. London xv.
Parapetalus, g. defined and spp. enumerated, p. 445; BASSETT-SMITH, P. Zool. Soc. London 1899.
Paurocope, n. g. defined for *robusta*, Otago Harbour, N. Z., described, p. 46, pl. xiii, figg. 1–9; BRADY, Tr. Zool. Soc. London xv, n. sp.
Peltidium novæ-zealandiæ, Port Chalmers and Otago, N. Z., described, p. 44, pl. ix, figg. 28 & 29, xii, figg. 12–15; BRADY, t. c. n. sp.
Penella, g. defined and spp. enumerated, p. 482; BASSETT-SMITH, P. Zool. Soc. London 1899.
Peniculus, g. defined and spp. enumerated, p. 482; BASSETT-SMITH, t. c.
Perissopus, g. defined and spp. enumerated, p. 467; BASSETT-SMITH, t. c.
Peroderma, g. defined and spp. enumerated, p. 488; BASSETT-SMITH, t. c.
Philichthys, g. defined and sp. figured, p. 478, pl. xxvi, fig. 2; BASSETT-SMITH, t. c.
Phroso, n. g. defined for *gracilis*, Port Chalmers, N. Z., described, p. 42, pl. xi, figg. 19–27; BRADY, Tr. Zool. Soc. London xv, n. sp.
Phyllophorus, g. defined and spp. enumerated, p. 465; BASSETT-SMITH, P. Zool. Soc. London 1899.
Pseudoclavella, g. defined and spp. enumerated, p. 474; BASSETT-SMITH, t. c.
Rhynchomyzon purpurocinctum, occurrence in Moray Firth, p. 57; SCOTT, Ann. Scott. Nat. Hist. 1899.
Richiardia, n. g. defined and *denticis* figured, p. 479, pl. xxvi, fig. 3; BASSETT-SMITH, P. Zool. Soc. London 1899.
Sciænophilus, g. defined and spp. enumerated, p. 453; BASSETT-SMITH, t. c.
Scutellidium plumosum, Otago Harbour, N. Z., described, p. 45, pl. xii, figg. 16–21, 23–25; BRADY, Tr. Zool. Soc. London xv, n. sp.
Sphærifer, g. defined and *leydigi* figured, p. 479, pl. xxvi, fig. 4; BASSETT-SMITH, P. Zool. Soc. London 1899.
Sphyrion, g. defined and spp. enumerated, p. 488; BASSETT-SMITH, t. c.
Stenhelia blanchardi, occurrence in the Firth of Forth, p. 241; SCOTT, Ann. Scott. Nat. Hist. 1899.
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Synestius, g. defined and spp. enumerated, p. 445; BASSETT-SMITH, t. c.
Tanypleurus, g. defined and spp. enumerated, p. 495; BASSETT-SMITH, t. c.
Temora tenuicauda, Bay of Islands, N. Z., described, p. 34, pl. ix, figg. 16–23; BRADY, Tr. Zool. Soc. London xv, n. sp.
Thalestris hibernica, occurrence in the Cromarty Firth, p. 57; SCOTT, Ann. Scott. Nat. Hist. 1899.
T. polaris, p. 106, pl. vii, figg. 8–16, *frigida*, p. 108, pl. vii, figg. 17–23, viii, figg. 1 & 2, *jacksoni*, p. 109, pl. viii, figg. 3–9, Franz-Josef Land, described; SCOTT, J. Linn. Soc. xxvii. *T. ciliata*, Akaroa Harbour, N. Z., p. 43, pl. xi, figg. 28–33, *australis*, Otago Harbour, N. Z., p. 43, pl. xii, figg. 1–5, described; BRADY, Tr. Zool. Soc. London xv : n. spp.
Therodamus, g. defined and spp. enumerated, p. 481; BASSETT-SMITH, P. Zool. Soc. London 1899.
Thysanote, g. defined and spp. enumerated, p. 496; BASSETT-SMITH, t. c.
Tracheliastes, g. defined and spp. enumerated, p. 500; BASSETT-SMITH, t. c.
Trebius, g. defined and spp. enumerated, p. 461; BASSETT-SMITH, t. c.
Trichthacerus, g. defined and spp. enumerated, p. 490; BASSETT-SMITH, t. c.
Tucca, g. defined and spp. enumerated, p. 469; BASSETT-SMITH, t. c.
Vanbenedenia, g. defined and spp. enumerated, p. 497; BASSETT-SMITH, t. c.

OSTRACODA.

The following memoirs should be consulted:—FOURTAU (50), HARTWIG (57–61), LIENENKLAUS (71), LORTET (74), SHARPE (108), TURNER (121).
Key tables of genera and species of North American Ostracoda will be found in SHARPE, Bull. Illinois Lab. iv, p. 414.

†*Aparchites robustus*, Cambrian Long Is., Canada, p. 132, pl. i, figg. 4*a–c*; MATTHEW, Tr. R. Soc. Canada iv, sec. iv, n. sp.
†*Beyrichia idonea*, p. 206, pl. vi, fig. 9, *buchiana*, p. 206, pl. vi, fig. 6, *inclinata*, p. 207, pl. vi, fig. 8, Silurian, Podolia, figures and notes; VENYUKOW, Mater. Geol. Rus. xix.
†*B. primæva*, Cambrian, Hanford Brook, p. 133, pl. i, figg. 2*a–c*; MATTHEW, Tr. R. Soc. Canada iv, sec. iv, n. sp.
Candona pubescens, not synonymous with *Cypris pubescens*, p. 543; HARTWIG, Zool. Anz. xxii. *C. pubescens*, described, p. 186; HARTWIG, SB. Ges. naturf. Berlin 1899. *C. acuminata*, Texas, p. 449, pl. xliv, figg. 5–7, *fabæformis*, Normal, Ill., p. 454, pl. xlv, figg. 1–3; SHARPE, Bull. Illinois Lab. iv.
C. weltneri, Brandenburg, described, p. 50, *marchica*, Brandenburg, described, p. 183; HARTWIG, SB. Ges. naturf. Berlin 1899. *C. mülleri*, Brandenburg, p. 149; HARTWIG, Zool. Anz. xxii. *C. harmsworthi*, Franz-Josef Land, described, p. 83, pl. iii, figg. 16 & 17; SCOTT, J. Linn. Soc. xxvii. *C. recticauda*, Clifton, Ill., p. 451, pl. xlvi, figg. 7–11, *simpsoni*, Havana, Ill., p. 452, pl. xlvi, figg. 1–6, *sigmoides*, Havana, Ill., p. 455, pl. xlv, figg. 4–11, *reflexa*, Havana, Ill., p. 457, pl. xlvii, figg. 1–3; SHARPE, Bull. Illinois Lab. iv, n. spp.
Cyclocypris globosa, Franz-Josef Land, p. 82, pl. iv, fig. 1; SCOTT, J. Linn. Soc. xxvii.
C. forbesi, Bloomington, Ill., described, p. 432, pl. xli, figg. 1–7; SHARPE, Bull. Illinois Lab. iv, n. sp.
Cypria exsculpta, Havana, Ill., p. 465, pl. xlvii, fig. 4, *ophthalmica*, Minnesota, p. 466, pl. xlvii, fig. 5; SHARPE, t. c.
C. pustulosa, Havana, Ill., p. 461, pl. xlviii, figg. 6–10, *obesa*, Havana, Ill., p. 462, pl. xlviii, figg. 1–5, *dentifera*, Cincinnati, p. 463, pl. xlvii, figg. 6–11; SHARPE, t. c. n. spp.

Cypricercus reticulatus, Ceylon, p. 75; DADAY, Suppl. to Termes. Fuzetek xxi, n. sp.
Cypridopsis vidua, p. 469, *smaragdina*, S. Chicago, p. 470, pl. xlviii, figg. 11 & 12; SHARPE, Bull. Illinois Lab. iv, n. spp.
Cyprinotus burlingtonensis, Normal, Ill., p. 435, pl. xlii, fig. 7, *incongruens*, Cincinnati, p. 437, pl. xliii, figg. 1 & 2; SHARPE, t. c.
C. pellucida, Havana, Ill., described, p. 434, pl. xlii, figg. 1–6; SHARPE, t. c. n. sp.
Cypris granulata, Ceylon, p. 73; DADAY, Suppl. to Termes. Fuzetek xxi. *C. testudinaria*, Bloomington, Illinois, p. 444, pl. xliv, figg. 1–4; SHARPE, Bull. Illinois Lab. iv, n. spp.
C. pubescens, not identical with *Candona pubescens*, p. 543; HARTWIG, Zool. Anz. xxii. *C. reticulata*, Normal, Ill., p. 441, pl. xliii, figg. 3 & 4, *fuscata*, Urbana, Ill., p. 442, pl. xliii, fig. 5; SHARPE, Bull. Illinois Lab. iv.
†*Entomis reniformis*, Silurian, Podolia, p. 207, pl. vi, fig. 10; VENYUKOW, Mater. Geol. Russ. xxi.
Herpetocypris dubia, p. 82, pl. iv, figg. 7–11, *arctica*, p. 83, pl. iv, figg. 2–6, Franz-Josef Land, described; SCOTT, J. Linn. Soc. xxvii, n. spp.
Limnicythere reticulata, Urbana, Ill., p. 423, pl. xxxix, figg. 1–7, *illinoisensis*, Havana, Ill., p. 425, pl. xxxix, figg. 8–13, and xl, described; SHARPE, Bull. Illinois Lab. iv, n. spp.
Notodromas entzi, Ceylon, p. 79; DADAY, Suppl. to Termes. Fuzetek, xxi, n. sp.
Paracandona, n. g. defined, p. 309, for *Candona euplectella*, described, p. 310; HARTWIG, Zool. Anz. xxii.
Pontocypris hyperborea, Franz-Josef Land, p. 83, pl. iv, figg. 12–15, described; SCOTT, J. Linn. Soc. xxvii, n. sp.
†*Primitia pyriformis*, Cambrian, Long Island, p. 132, pl. i, figg. 3*a*–*c*; MATTHEW, Tr. R. Soc. Canada iv, section 4, p. 132, n. sp.
Stenocypris major, Ceylon, p. 69, described; DADAY, Suppl. to Termes. Fuzetek xxi.
S. ceylonica, Ceylon, p. 71; DADAY, t. c. n. sp.

CIRRIPEDIA.

Descriptions and figures of larval stages of various Cirripedia will be found in HANSEN (54).

GIGANTOSTRACA

i.e., TRILOBITA, XIPHOSURA & EURYPTERIDA.

I. TITLES.

1. AMI, H. M. *Bellinurus grandævus*, a new species of Palæozoic Limuloid Crustacean recently described by Prof. T. R. Jones and Dr Henry Woodward, from the Eo-Carboniferous of Riversdale, Nova Scotia. Ottawa Natural. xxii, pp. 207–209.

2. FRITSCH, A. Preliminary Note on *Prolimulus woodwardi*, Fritsch, from the Permian Gaskohle at Nyřan, Bohemia. Geol. Mag. Dec. iv, vol. vi, 1899, pp. 57–59, woodcut in text.

3. HOLM, G. Über die Organisation des *Eurypterus fischeri*, Eichw. Mem. Ac. St. Petersb. viii, No. 2, pp. 57, 10 pls.

4. ——. Palæontologiska notiser. 13. Om den yttre anatomien hos *Eurypterus fischeri*. Geol. Foren. Stockholm Forh. xxi, pp. 83–128, pls. i–iv.

5. ——. Palæontologiska Notiser, 1–10. Sveriges geol. Unders. Afh. series C, No. 176.
Reprints from Geol. Foren. Stockholm Forh. xix & xx.

6. JONES, T. R. & WOODWARD, H. Contributions to fossil Crustacea. Geol. Mag. New Series, Dec. iv, vol. vi, 1899, pp 388–395, pl. xv.

7. MATTHEW, G. F. A new Cambrian Trilobite. Bull. Soc. N. Brunswick iv, pp. 137–142, pl. iii.

8. ——. Studies on Cambrian Faunas, No. 2, The Cambrian System in the Kennebecasis Valley. Tr. R. Soc. Canada, series ii, vol. iv, 1898, section iv, pp. 123–150, pls. i & ii.

9. McCOY, SIR F. Note on a New Australian *Pterygotus*. Geol. Mag. New Series, Dec. iv, vol. vi, 1899, pp. 193 & 194.

10. MOBERG, J. C. Sveriges älsta kända Trilobiter. Geol. Foren. Stockholm Forh. xxi, pp. 309–348, pls. 13–15.

11. RAVN, J. P. J. Trilobifaunæn i den bornholmske Trinucleusskifer. Danmarks geol. Unders. 4 Række, No. 10, pp. 49–60.

12. REDLICH, K. The Cambrian fauna of the Eastern Salt Range. Mem. geol. Surv. India, New Series, vol. i, No. 1, pp. 1–13, pl. i, 1899.

13. REED, F. R. C. Woodwardian Museum notes; a New Carboniferous Trilobite. Geol. Mag. New Series, Dec. iv, vol. vi, 1899, pp. 241–245, pl. x.

14. ——. Woodwardian Museum notes: A new Trilobite from Mount Stephen, Field, B. C. T. c. pp. 358–361, fig. in text.

15. ——. The Lower Palæozoic bedded rocks of County Waterford. Quart. J. Geol. Soc. lv, 1899, pp. 718–772, pl. xlix.

16. VENYUKOW, P. N. Die Fauna der silurischen Ablagerungen des Gouvernements Podolien. Mater. Geol. Russ. xix, pp. 21–266, pls. i–ix. (Abstr. in Geol. Mag. 1900, pp. 132 & 133.)

II. BIOLOGY.

Structure etc. of *Eurypterus fischeri*; HOLM, Mem. Ac. St Petersb. viii, No. 2.

Table of comparative development of *Acantholenus spiniger* and *Anomocare stenotoides*, p. 148; MATTHEW, Tr. R. Soc. Canada iv, Sec. iv.

III. DISTRIBUTION.

Palæozoic. Co. Waterford: *Trilobita*, incl. 9 n. spp. & 1 n. g.; REED (15). Sweden: *Trilobita*; MOBERG (10).

Lower Cambrian. Newfoundland: n. sp. of *Metadoxides*; MATTHEW (7).

Middle Cambrian. British Columbia: *Trilobita*, n. sp. of *Orycto-cephalus*; REED (14).

Cambrian. India, E. Salt Range: *Trilobita*; REDLICH (12). Kennebecasis Valley: *Trilobita*; MATTHEW (8).

Silurian. Scotland: *Trilobita*, p. 659; PEACH & HORNE, Silurian Rocks of Britain, Vol. I, in Mem. geol. Surv. U. K. Of Podolia: *Trilobita* and *Eurypterida*; VENYUKOW (16).

Upper Silurian. Victoria: *Eurypterida*, n. sp. of *Pterygotus*; McCOY (9).

Devonian. Milwaukee, Wisconsin: *Trilobita*, p. 279; MONROE & TELLER, J. Geol. vii. Of S. Indiana and C. Kentucky: *Gigantostraca*; KINDLE, Bull. Amer. Pal. xii, p. 83.

Lower Carboniferous. Nova Scotia: *Xiphosura*, *Bellinurus grandævus*; JONES & WOODWARD (6).

Carboniferous. Yorkshire: *Trilobita*, n. sp. of *Phillipsia*; REED (13).

Permian. Bohemia: *Prolimulus woodwardi*; FRITSCH (2).

IV. SYSTEMATIC.

TRILOBITA.

†*Acantholenus*, n. subgenus of *Olenus* for *spiniger*, Cambrian, Canada, p. 142, pl. ii, figg. 4*a–e*, development of the young, p. 144, pl. ii, figg. 4*f–i*; MATTHEW, Tr. R. Soc. Canada iv, Sec. 4.

†*Agnostus pisiformis*, Cambrian, Canada, forms, fragments and varieties, p. 136, pl. ii, figg. 1–3, development of the young, p. 138; MATTHEW, t. c.

†*Anomocare stenotoides*, Cambrian, Canada, p. 139, pl. ii, figg. 5*a–e*, development of the young, p. 140, pl. ii, figg. 5*g–i*; MATTHEW, t. c.

†*Asaphus haughtoni*, Palæozoic, Co. Waterford, p. 757, pl. xlix, fig. 13; REED, Quart. J. Geol. Soc. lv, n. sp.

†*Cybele machenryi*, p. 751, pl. xlix, fig. 7, *sex-tuberculata*, p. 752, pl. xlix, fig. 8, Palæozoic, Co. Waterford; REED, t. c. n. spp.

†*Encrinurus fallax*, Palæozoic, Co. Waterford, p. 753, pl. xlix, figg. 9–12; REED, t. c. n. sp.

†*Georgiellus asaphoides*, Lower Cambrian, Sweden, p. 317, pl. xiii, figg. 1*a–b*; MOBERG, Geol. Foren. Stockholm Forh. xxi.

†*Holmia lundgreni*, Sweden, p. 321, pl. xiv, figg. 1–14, *kjerulfi*, p. 318, pl. xiii, fig. 3; MOBERG, t. c.

†*Illænus davisi*, var. *pseudolimbatus*, nov., Palæozoic, Co. Waterford, p. 758; REED, Quart. J. Geol. Soc. lv. *I. bouchardi*, p. 211, pl. ix, fig. 8, Silurian, Podolia; VENYUKOW, Mater. Geol. Russ. xix.

†*Mesonacis vermontana*, p. 318, pl. xiii, fig. 4; MOBERG, Geol. Foren. Stockholm Forh. xxi.

†*Metadoxides magnificus*, Lower Cambrian, Newfoundland, p. 137, pl. iii; MATTHEW, Bull. Soc. N. Brunswick iv, n. sp.

†*Micmacca van-ingeni*, Cambrian, Long Is., p. 135, pl. i, figg. 6*a* & *b*; MATTHEW, Tr. R. Soc. Canada iv, Sec. iv.

†*Olenelloides armatus*, p. 313, pl. xiii, fig. 6; MOBERG, Geol. Foren. Stockholm Forh. xxi.

†*Olenellus thompsoni*, Cambrian, p. 317, pl. xiii, fig. 2; MOBERG, t. c.

†*O.* sp. ?, p. 338, pl. xv, figg. 18 & 19; MOBERG, t. c. n. sp.

†*Oryctocephalus reynoldsi*, Middle Cambrian, Mount Stephen, Field, British Columbia, p. 358; REED, Geol. Mag. iv, vi, n. sp.

†*Phillipsia cracoensis*, Carboniferous, Butterhaw Knoll, Cracoe, Yorkshire, p. 241, pl. x; REED, t. c. n. sp.

†*Protagraulos priscus*, Cambrian, Hanford Brook, p. 134, pl. i, fig. 5; MATTHEW, Tr. R. Soc. Canada iv, Sec. iv.

Proteus, sp., Silurian, Podolia, p. 214, pl. ix, fig. 7; VENYUKOW, Mater. Geol. Russ. xix.

†*Remopleurides portlocki*, p. 746, pl. xlix, fig. 4, *salteri*, p. 747, pl. xlix, figg. 1–3, *tuberculatus*, p. 748, pl. xlix, fig. 5, Palæozoic, Co. Waterford; REED, Quart. J. Geol. Soc. lv, n. spp.

†*Schmidtia mickwitzi*, p. 319, pl. xiii, figg. 5*a–c*, *torelli*, Sweden, p. 330, pl. xv, figg. 1–17; MOBERG, Geol. Foren. Stockholm Forh. xxi.

†*Tramoria*, n. g. for *punctata*, Palæozoic, Co. Waterford, p. 758, pl. xlix, figg. 14–16; REED, Quart. J. Geol. Soc. lv, n. sp.

XIPHOSURA.

†*Bellinurus grandævus*, Lower Carboniferous, Nova Scotia, p. 388, pl. xv, figg. 2 & 3; JONES & WOODWARD, Geol. Mag. iv, vi.

†*Prolimulus woodwardi*, Permian Gaskohle, Nyřan, Bohemia, p. 57; FRITSCH, Geol. Mag. Dec. iv, vi, n. sp.

EURYPTERIDA.

†*Pterygotus australis*, Upper Silurian, Victoria, p. 193; McCOY, Geol. Mag. Dec. iv, vi, n. sp.

PANTOPODA.

I. TITLES.

HOEK, P. P. C. On Four Pycnogonids, dredged during the cruise of the Challenger (investigated and described after the completion of the report). Tijdsch. Nederland. Dierk. Ver. Ser. 2, v, pp. 290–301, pls. ii & iii.

MEINERT, F. *Pycnogonida* in "The Danish Ingolf-Expedition." Vol. III, Part i, pp. 1–71, pls. i–v, 2 figg. in text, chart and list of stations. Copenhagen, 1899.

II. BIOLOGY.

Development, nomenclature, anatomy, etc., of the *Pycnogonida*; MEINERT. MEINERT (p. 31), classifies *Pycnogonida* with *Arachnida*.

III. DISTRIBUTION.

Arctic Seas: *Pycnogonida*, incl. 3 n. spp. of *Nymphon*; MEINERT.
N. Atlantic: n. sp. of *Colossendeis*, n. sp. of *Pallenopsis*; MEINERT.
Norwegian Sea: n. sp. of *Ascorhynchus*; MEINERT.
Davis Strait: 2 n. spp. of *Pallene*; MEINERT.
Near Prince Edward Is.: n. sp. of *Anoplodactylus*; HOEK.
N. W. Pacific: n. sp. of *Colossendeis*; HOEK.
Straits of Magellan: n. sp. of *Pycnogonum*; HOEK.
Kerguelen Is.: n. sp. of *Pallene*; HOEK.

IV. SYSTEMATIC.

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Ascorhynchus tridens, Norwegian Sea, p. 55, pl. v, figg. 7–18, described; MEINERT, Danish Ingolf-Exped. iii, n. sp.

Chætonymphon hirtum, p. 297, pl. iii, figg. 14–19, occurrence in Southern part of North Sea; HOEK, Tijdschr. Nederland. Dierk. Ver. v.

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XI. ARACHNIDA.

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CONTENTS.

INTRODUCTION.

THE Record of Arachnida, like that of Crustacea, again shows a slight decline in the number of papers published during the year, but from one point of view, the decline is of small consequence for, whatever the number of papers published on this group, the number of species described remains approximately constant.

The Recorder has, for some years past, emphasised the lack of agreement amongst authors on the classification of the Araneæ and has pointed out the difficulty of dealing satisfactorily with the nomenclature of the group. He has now come to the conclusion that the workers on the group would find a simple alphabetical arrangement of the Spiders of far more use to them than the system hitherto adopted of arranging the Araneæ in families. He finds that, in spite of great care having been taken in the compilation of previous Records, inconsistencies, more annoying than serious, have managed to creep in. Thus the same genus occasionally appears under two families owing to its being so placed by two distinct writers. Whilst not desiring to excuse in any way the oversights on his part which have led to this confusion, the Recorder feels that, until a more general agreement amongst Arachnologists is arrived at, it is better to ignore the family-arrangement altogether.

It seems natural, in this connection, to say a few words about Nomenclature and Taxonomy. KRAEPELIN's "Scorpiones and Pedipalpi" in "Das Tierreich" will doubtless be found helpful to specialists as will also CANESTRINI & KRAMER's *Demodicidæ* and *Sarcoptidæ* in the same work.

The attention of students of the *Pedipalpi* is drawn to the fact that two authors have discovered, apparently simultaneously, that the name *Tripeltis* is previously occupied, and have both renamed the genus, COOK calling it *Triplomus* and KRAEPELIN *Trithyreus*. KRAEPELIN's name appears to be slightly the earlier but the matter must be left to others to decide. It is to be hoped that, small as the point is, one name will be finally dropped.

Amongst the larger systematic works of the year a place of eminence must be given to KRAEPELIN's "Zur Systematik der Solifugen."

POCOCK's paper on *Pœcilotheria* and PURCELL's on *Opisthophthalmus* are useful works and set an example that might with advantage be followed by other specialists. The latter author's memoirs on the *Solifugæ* and Scorpions of South Africa promise well for future studies of the same region.

POCOCK deals with a number of species from different parts of the world. His papers on Scorpions should be specially mentioned.

Acari are ever popular and there is no lack of memoirs on them this year. NEUMANN continues his revision of the *Ixodidæ* and TROUESSART publishes a long paper of preliminary descriptions of species of *Sarcoptidæ*. TROUESSART's papers will be found to bristle with new sub-species.

Especial attention must be drawn to the nomenclature changes published in the part of Das Tierreich dealing with *Acari*.

The work on the Spiders of Central America in Biol. Centr.-Amer. continues. Parts of both volumes have this year appeared.

SIMON's papers this year deal principally with Spiders from the South Pacific and Malay Archipelago. No further part of "Histoire naturelle des Araignées" has, as yet, appeared.

Beyond a few small papers nothing more need be mentioned here. SABBATINI's account of a "ferment anticoagulant" in *Ixodes ricinus* is interesting. So also is GÖLDI's account of the curious spider *Epeiroides bahiensis*.

Other papers, being principally systematic and faunistic, will be found fully analysed in their proper sections of this Record.

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Mode of life and habits of species of *Atax*; WOLCOTT, Tr. Amer. Micr. Soc. xx, pp. 244–251.

Habits and Biology of *Pediculoides ventricosus*; BRUCKER (15) and Miscell. Biol. p. 67.

Parasitism of *Pimpla mexicana* on *Epeira labyrinthea*; SEURAT, Mem. Soc. Ant. Alzate xii, p. 249.

Bird-eating and other habits of *Pœcilotheria*; p. 82, POCOCK, Ann. Nat. Hist. (vii), iii.

Nest and cocooning habits of *Fecenia angustata*; p. 109, POCOCK in WILLEY'S Zool. Res. i.

Galeodes and *Buthus*; Habits, poisonous nature, hibernation, predatory habits, etc.; p. 977, LÖNNBERG, Ofv. Ak. Forh. lvi.

A spider that breaks its net; p. 222, BRANDES, Zeitschr. wiss. Zool. lxxii.

Chernetes living in nests of Bees, Ants and Termites; WASMANN, p. 411, Deutsche ent. Zeitschr. 1899.

Instinct in Spiders; DICKSON-BRYON (25).

Habits and distribution of S. African Scorpions, p. 135; PURCELL, Ann. S. African Mus. i.

Geographical Distribution of *Pedipalpi* and *Solifugæ*; POCOCK (70).

III. DISTRIBUTION.

Palæarctic Region.

i. NEW FORMS.

Britain: *Hydrachnidæ*, *Wettina macroplica*; p. 33, GEORGE (30).—Highams Park: *Hydrachnidæ*, n. sp. of *Atax*; SOAR (92).

Norway: *Acari*, n. g. and 21 n. spp. of *Hydrachnidæ*; THOR (102).—Hallingdal: *Araneæ*, n. sp. of *Stylophora*; p. 25, STRAND (94).

Paris: *Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).

Germany, Ammerwaldthal, Bavarian Alps: *Hydrachnidæ*, n. sp. of *Feltria*; PIERSIG (59).—Dresden: *Hydrachnidæ*, n. sp. of *Eylais*; PIERSIG (58).—Elbe near Podebrad: *Hydrachnidæ*, n. g.; THON (98).—Hohe Tatra: *Hydrachnidæ*, n. sp. of *Eylais*; PIERSIG (58).—Leipzig: *Hydrachnidæ*, 4 n. spp. of *Eylais*; PIERSIG (58).—Schwarzwald: *Hydrachnidæ*, n. sp. of *Arrenurus*, p. 549; PIERSIG (59).—Thüringen: *Hydrachnidæ*, n. sp. of *Eylais*; PIERSIG (58).

Bohemia: *Hydrachnidæ*, 2 n. spp.; THON (101).—*Hydrachnidæ*, 6 n. spp. of *Eylais*; THON (99).—*Hydrachnidæ*, 3 n. spp. of *Hydrachna*, n. sp. of *Arrenurus*; THON (100).—Witingau: n. sp. of *Hydrachna*; PIERSIG (59).

Moscow: *Hydrachnidæ*, n. sp. of *Eylais*, n. sp. of *Hydrachna*, 2 n. spp. of *Arrenurus*, n. sp. of *Acercus*; CRONEBERG (22).

Palestine: *Solifugæ*, n. sp. of *Gylippus*, n. sp. of *Rhagodes*; KRAEPELIN (47).—Dead Sea shores: *Solifugæ*, n. sp. of *Gnosippus*; KRAEPELIN (47).

Syria: *Solifugæ*, n. sp. of *Eusimonia*, n. sp. of *Paragaleodes*; KRAEPELIN (47).

Turkestan: *Solifugæ*, n. sp. of *Karschia*, n. sp. of *Eusimonia*; KRAEPELIN (47).—Buchara: *Solifugæ*, n. sp. of *Gylippus*; KRAEPELIN (47).

Persia: *Solifugæ*, n. sp. of *Karschia*, n. sp. of *Rhagodes*; KRAEPELIN (47).

E. Asia: *Araneæ*, 5 n. spp.; ADOLF (1).

Morocco: *Solifugæ*, 2 n. spp. of *Solpuga*; KRAEPELIN (47).

Algeria: *Solifugæ*, n. sp. of *Eusimonia*, n. sp. of *Dæsia*; KRAEPELIN (47).—*Araneæ*, n. sp. of *Dipœna*; SIMON (86).—*Ixodidæ*, n. sp. of *Hyalomma*; NEUMANN (54).

Tunis: *Solifugæ*, n. sp. of *Paragaleodes*; KRAEPELIN (47).

Egypt: *Araneæ*, n. sp. of *Dictyna* and n. sp. of *Firmicus*; SIMON (88).—Upper Egypt: *Solifugæ*, n. sp. of *Paragaleodes*; KRAEPELIN (47).

ii. Local Faunæ.

Edinburgh: *Araneæ*, *Phalangida* and *Chernetidæ*: Carpenter & Evans (20).

Port Erin: *Araneæ*; Jackson (41).

Dublin: Freshwater *Hydrachnidæ*; Freeman (27).

Scandinavia and Denmark: *Pseudoscorpiones*; Tullgren (107).—Norway: *Acari*, *Hydrachnidæ*; Thor (102).—Hallingdal: *Araneæ*; Strand (94).—Trondhjem: *Arachnida*; Storm (93).

Lower Loire: *Pseudoscorpiones*, *Obisium littorale*; Ferronnière (26).

Erzgebirge: *Hydrachnidæ*; Piersig (57).

Moscow and neighbourhood: *Hydrachnidæ*; Croneberg (22).

Madeira: *Arachnida*; Kulczński (48).

Algeria: *Araneæ*; Simon (86).

Egypt: *Araneæ*; Simon (88).

E. Asia: *Arachnida*; Adolf (1).

Ethiopian Region.

i. New Forms.

Africa: *Arachnida*, 6 n. spp.; Pocock (67).—*Thelyphonidæ*, n. sp. of *Hypoctonus*; Hentschel (37).—*Ixodidæ*, 2 n. spp. of *Amblyomma*; Neumann (54).—W. Africa: *Araneæ*, n. g. of *Theraphosidæ*, n. sp. of *Phalæa*; Pocock (67).—Gambia: n. sp. of *Pandinus*; Pocock (67).—Benito River: *Araneæ*, n. sp. of *Acanthodon*, 2 n. spp. of *Phoneyusa*, n. sp. of *Scodra*, n. sp. of *Aspectaus*, 3 n. spp. of *Araneus*, n. sp. of *Cyrtophora*, 3 n. spp. of *Cærostris*, n. sp. of *Gasteracantha*, n. sp. of *Aranæthra*, n. sp. of *Aethrodes*, n. g., n. sp. of *Hysterocrates*, 8 n. spp. of *Thalassius*, 2 n. spp. of *Sparassus*, n. sp. of *Dolomedes*, 3 n. spp. of *Ctenus*, n. sp. of *Torania*, n. sp. of *Palystodes*, n. g., n. sp. of *Phrynarachne*, 2 n. spp. of *Platythomisus*; Pocock (67).—Sierra Leone: *Araneæ*, n. sp. of *Thalassius*; Pocock (67).—Jebba, Upper Niger: *Araneæ*, n. sp. of *Hysterocrates*; Pocock (67).—Cameroons: *Araneæ*, 2 n. spp. of *Sparassus*; Pocock (57).—Loango: n. sp. of *Peucetia*; Pocock (67).—Congo: *Ixodidæ*, 5 n. spp. of *Amblyomma*; Neumann (54).—Upper Congo: n. sp. of *Uroplectes*; p. 835, Pocock (67).

Nyssaland: *Ixodidæ*, n. sp. of *Amblyomma*; Neumann (54).—Lake Tanganyika: *Solifugæ*, n. sp. of *Solpuga*; Kraepelin (47).

E. Africa, Somaliland: *Solifugæ*, n. sp. of *Solpuga*; Kraepelin (47).—*Araneæ*, n. sp. of *Chiracanthium*; Pavesi in Robecchi Bricchetti (80).—German E. Africa: *Solifugæ*, n. sp. of *Rhagodes*, n. sp. of *Solpuga*; Kraepelin (47).—Zanzibar: *Ixodidæ*, n. sp. of *Amblyomma*; Neumann (54).

S. Africa: *Solifugæ*, 10 n. spp. of *Solpuga*, 3 n. spp. of *Ceroma*, 4 n. spp. of *Dæsia* and n. sp. of *Hexisopus*; Purcell (75).—*Scorpiones*, 3 n. spp. of *Parabuthus* and 4 n. spp. of *Hadogenes*; Purcell (76).—*Scorpiones*, 3 n. spp. of *Opisthophthalmus*; Purcell (74).—Namaqualand: *Solifugæ*, 2 n. spp. of *Dæsia*, n. sp. of *Solpuga*; Kraepelin (47).—Walfish Bay: *Solifugæ*, n. sp. of *Hexisopus*; Kraepelin (47).—Damaraland: *Solifugæ*, 2 n. spp. of *Solpuga*, n. sp. of *Hexisopus*; Kraepelin (47).—Zambesi: *Solifugæ*, n. sp. of *Hemiblossia*, n. g.; Kraepelin (47).—Bechuanaland: *Scorpiones*, n. sp. of *Parabuthus*; Pocock (62).—Griqualand W.: *Scorpiones*, n. sp. of *Cheloctonus*; Pocock (62).—Transvaal: *Scorpiones*, n. sp. of *Opisthophthalmus*; Pocock (62).—*Solifugæ*, n. sp. of *Solpuga*; Kraepelin (47).—Delagoa Bay: *Solifugæ*, n. sp. of *Solpuga*; Kraepelin (47).—

Natal: *Araneæ*, n. sp. of *Poltys*; p. 521, O. P. CAMBRIDGE (17).—Basutoland: *Scorpiones*, n. sp. of *Opisthacanthus*; POCOCK (62).—Cape Colony: *Solifugæ*, n. sp. of *Sarcophorus*, n. g.; KRAEPELIN (47).—*Araneæ*, n. sp. of *Andromma*; SIMON (87).—*Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).

ii. LOCAL FAUNÆ.

W. Africa: *Pedipalpi*; POCOCK (67).—*Scorpiones*; POCOCK (67).
Somaliland: *Arachnida*; PAVESI in ROBECCHI BRICCHETTI (80), p. 697.
S. Africa: *Solifugæ*; PURCELL (75).—*Scorpiones*, *Opisthophthalmus*; PURCELL (74).
Madagascar: *Araneæ*, n. sp. of *Rhitymna*; O. P. CAMBRIDGE (17).
Aden: n. sp. of *Hemiscorpius*; POCOCK (62).
Obok, Gulf of Aden: *Solifugæ*, n. sp. of *Dæsia*; KRAEPELIN (47).
Sokotra: 2 n. spp. of *Araneus*, n. g. of *Palpimanidæ*, and 1 n. sp. of *Capheris*; POCOCK (64).—4 n. spp. and 1 n. g. of *Scorpiones*; POCOCK (63).

Oriental Region.

i. NEW FORMS.

India: 2 n. spp. and 1 n. g. of *Scorpiones*; POCOCK (66).—6 n. spp. of *Scorpiones*; POCOCK (65).—*Solifugæ*, n. sp. of *Rhagodes*; POCOCK (66).—3 n. spp. of *Pedipalpi*; POCOCK (66).—20 n. spp. and 3 n. g. of *Araneæ*; POCOCK (66).—3 n. spp. of *Pœcilotheria*; POCOCK (60).
Ceylon: 5 n. spp. of *Araneæ*; POCOCK (66).—*Araneæ*, n. sp. of *Diæa*, n. sp. of *Phrynarachne*, n. sp. of *Talaus*, n. sp. of *Boliscus*, n. sp. of *Holopelus*, 2 n. spp. of *Monæses*; O. P. CAMBRIDGE (17).—N. sp. of *Pœcilotheria*; POCOCK (60).—*Hydrachnidæ*, 13 n. spp.; DADAY (23).
Siam: *Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).
Singapore: *Scorpiones*, n. sp. of *Chærilus*; POCOCK (62).—*Araneæ*, n. sp. of *Gea*, n. sp. of *Milonia*; O. P. CAMBRIDGE (17).—*Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).
Sumatra: *Opiliones*, n. sp. of *Gagrella*, 4 n. spp. of *Pseudoscorpiones*, 7 n. g., 38 n. spp. *Araneæ*; SIMON (85).
Borneo: *Scorpiones*, n. sp. of *Chærilus*; POCOCK (62).
Malacca: *Scorpiones*, n. sp. of *Chærilus*; POCOCK (62).
Luzon: 3 n. spp. of *Araneæ*; SIMON (85).

ii. LOCAL FAUNÆ.

Ceylon: *Hydrachnidæ*; DADAY (23).
Sumatra: *Arachnida*; SIMON (85).

Australian and Polynesian Regions.

i. NEW FORMS.

British New Guinea, Fly River: n. sp. of *Phrynarachne*, n. sp. of *Stephanopsis* and n. sp. of *Menneus*; RAINBOW (78).
Queensland: *Scorpiones*, n. sp. of *Urodacus*; POCOCK (62).—Up. Endeavour River: 2 n. spp. of *Araneæ*; HOGG (39).—*Ixodidæ*, n. sp. of *Aponomma*; NEUMANN (54).
New Zealand: *Araneæ*, 9 n. spp.; SIMON (89).

Chatham Is.: *Araneæ*, 3 n. spp.; SIMON (89).
Moluccas: *Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).
New Britain: *Pedipalpi*, n. sp. of *Abalius*; *Araneæ*, n. g. and 13 n. spp.; POCOCK (68).
Solomon Is.: *Pedipalpi*, n. sp. of *Thelyphonus*; *Araneæ*, n. sp. of *Linus*; POCOCK (68).
Sandwich Is.: *Araneæ*, 3 n. spp., 1 n. g.; SIMON (89).
Laysan Is.: *Araneæ*, n. sp. of *Melanophora*; *Pseudoscorpiones*, n. sp. of *Chelifer*; SIMON (89).
Viti Levon Isles: *Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).

ii. LOCAL FAUNÆ.

British New Guinea: *Araneæ*; RAINBOW (78).
Queensland, Upper Endeavour River: *Araneæ*; HOGG (39).
New Zealand: *Arachnida*; SIMON (89).
Chatham Is.: *Arachnida*; SIMON (89).
New Britain, Solomon Is., Loyalty Is.: *Scorpiones*, *Pedipalpi*, *Araneæ*; POCOCK (68).
Sandwich Is.: *Arachnida*; SIMON (89).
Laysan Is.: *Arachnida*; SIMON (89).

Nearctic Region.

i. NEW FORMS.

N. America: *Ixodidæ*, 2 n. spp. of *Amblyomma*; NEUMANN (54).
Alaska: *Tomicomerus*, n. g. of *Acari*; PAVESI (56).
Commander Isles: *Araneæ*, n. sp. of *Gonglydium*, *Acari*, 5 n. spp.; BANKS, Rep. Fur-Seal Investigations.
United States, W. Carolina: *Solifugæ*, n. sp. of *Datames*; KRAEPELIN (47).—Arkansas: *Solifugæ*, n. sp. of *Datames*; KRAEPELIN (47).—Louisiana, Shreveport; *Araneæ*, 7 n. spp.; BANKS (4).—Texas: *Solifugæ*, n. sp. of *Cleobis*; KRAEPELIN (47).—California, Los Angelos: *Solifugæ*, n. sp. of *Cleobis*; BANKS (8).—*Solifugæ*, 2 n. spp. of *Datames*; KRAEPELIN (47).—Palm Springs: n. g. of *Pedipalpi*; COOK (21).—*Acari*, n. sp. of *Cæculus*; BANKS (6).—Washington: *Solifugæ*, n. sp. of *Datames*; KRAEPELIN (47).

ii. LOCAL FAUNÆ.

Commander Islands: *Araneida*; BANKS, Rep. Fur-Seal Investigations.
N. America: *Hydrachnidæ*, *Atax*; WOLCOTT (110).
N. Louisiana: *Araneæ*; BANKS (4).

Neotropical Region.

i. NEW FORMS.

C. America: *Araneæ*, 23 n. spp.; CAMBRIDGE, F. O. P. (18).—*Araneæ*, 2 n. spp.; CAMBRIDGE, O. P. (16).
Mexico: *Araneæ*, 9 n. spp.; CAMBRIDGE, O. P. (16).—*Araneæ*, 5 n. spp.; CAMBRIDGE, F. O. P. (18).—*Solifugæ*, n. sp. of *Datames*; KRAEPELIN (47).—*Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).

Guatemala: *Araneæ*, 5 n. spp.; CAMBRIDGE, F. O. P. (18).—*Araneæ*, 7 n. spp.; CAMBRIDGE, O. P. (16).—*Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).

Costa Rica: *Araneæ*, n. sp.; CAMBRIDGE, F. O. P. (18).—*Araneæ*, 3 n. spp.; CAMBRIDGE, O. P. (16).—*Ixodidæ*, 2 n. spp. of *Amblyomma*; NEUMANN (54).

Panama: *Araneæ*, 2 n. spp.; CAMBRIDGE, O. P. (16).

Darien: *Scorpiones*, n. sp. of *Tityus*; BORELLI (12).

W. Indies, Havana: *Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).—Jamaica: *Acari*, n. sp. of *Tarsonemus*; BANKS (7).—Santa Cruz: *Araneæ*, n. sp. of *Habrocestum*, n. sp. of *Jotus*, n. sp. of *Icius*, 2 n. spp. of *Lycosa*, n. sp. of *Gnathopalystes*, n. g., n. sp. of *Palystes*, n. sp. of *Eunesiotes*, n. g., n. sp. of *Araneus*, n. sp. of *Ischnocolus*; RAINBOW (77).—Trinidad: *Ixodidæ*, 2 n. spp. of *Amblyomma*; NEUMANN (54).

Colombia: *Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).—Bogota: *Araneæ*, n. sp. of *Evagrus*; O. P. CAMBRIDGE (16).

Venezuela; *Solifugæ*, n. sp. of *Cleobis*; KRAEPELIN (47).

French Guiana: *Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).

Ecuador: *Scorpiones*, 2 n. spp. of *Chactas*, 2 n. spp. of *Tityus*, n. sp. of *Anateris*; BORELLI (13).

Brazil: *Ixodidæ*, 5 n. spp. of *Amblyomma*; NEUMANN (54).—Amazons: *Ixodidæ*, n. sp. of *Aponomma*; NEUMANN (54).—San Paulo: 3 n. spp. of *Litoporus*, n. sp. of *Blechroscelis*, n. sp. of *Coryssocnemus*, n. sp. of *Smeringopus*, n. sp. of *Loxosceles*; MOENKHAUS (53).

Para: *Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).

Bolivia: *Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).

Uruguay; *Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).

Chili: *Opiliones*, 7 n. spp. and 2 n. g.; LOMAN (50).—*Araneæ*, n. g. of *Theraphosidæ*; POCOCK (61).

Argentina: *Scorpiones*, n. sp. of *Tityus*; BORELLI (11).—*Solifugæ*, n. sp. of *Paracleobis*; KRAEPELIN (47).

Galapagos Is.: *Ixodidæ*, n. sp. of *Amblyomma*; NEUMANN (54).

ii. LOCAL FAUNÆ.

Darien: *Scorpiones*; BORELLI (12).

Santa Cruz: *Araneæ*; RAINBOW (77).

Brazil: *Epeiridæ*; GOELDI (32).—San Paulo: *Araneæ*; MOENKHAUS (53).

Ecuador: *Scorpiones*; BORELLI (13).

Argentina and Paraguay: *Scorpiones*; BORELLI (11).

Distribution Unknown.

N. sp. of *Sperchon*, p. 550; PIERSIG (59).

Ixodidæ, 2 n. sp. of *Amblyomma*, n. sp. of *Aponomma*; NEUMANN (54).

Parasitic Forms.

A number of new species of *Acari* from various sources are described by TROUESSART (105).

List of Hosts of *Demodicidæ* and *Sarcoptidæ*; CANESTRINI & KRAMER (19).

IV. SYSTEMATIC.

SCORPIONES.

Anateris festæ, Ecuador, p. 1, BORELLI, Boll. Mus. Torino xiv, No. 345, n. sp.

Archisometrus nigristernis, Dehra Dun, India, described, p. 265, POCOCK, J. Bombay Soc. xii, n. sp.

Butheolus insularis, Sokotra, described, p. 8, POCOCK, Bull. Liverp. Mus. ii, n. sp.

Chactas festæ, p. 11, *dubius*, p. 14, Ecuador, BORELLI, Boll. Mus. Torino xiv, No. 345, n. spp.

Chærilus agilis, Malacca, p. 416, *lævimanus*, British N. Borneo, p. 417, *rectimanus*, Singapore, p. 418, POCOCK, Ann. Nat. Hist. (vii) iii; *C. tricostatus*, Sadi, India, described, p. 266, POCOCK, J. Bombay Soc. xii : n. spp.

C. variegatus, subsp. *nigricolor*, nov., E. Java, p. 419, POCOCK, Ann. Nat. Hist. (vii) iii.

Cheloctonus anthracinus, W. Griqualand, p. 413, POCOCK, t. c. n. sp.

Chiromachetes, n. g. for *fergusoni*, Travancore, p. 745, described, POCOCK, J. Bombay Soc. xii, n. sp.

Hadogenes gunningi, Pretoria, p. 435, *whitei*, Grahamstown, p. 436, *minor*, Cedarberg Mts., p. 437, *bicolor*, Zoutpansberg, p. 437, described, PURCELL, Ann. S. African Mus. i, n. spp.

Hemiscorpius arabicus, Aden, p. 413, POCOCK, Ann. Nat. Hist. (vii) iii; *H. socotranus*, Socotra, described, p. 8, POCOCK, Bull. Liverp. Mus. ii, n. spp.

Heterochactas gervaisii, Ecuador, p. 16, BORELLI, Boll. Mus. Torino xiv, No. 345.

Heteronebo, n. g. defined for *granti*, p. 7, *forbesii*, p. 8, Sokotra, described, POCOCK, Bull. Liverp. Mus. ii, n. spp.

Isometrus brachycentrus, Mangalore, India, p. 263, *acanthurus*, Matheran, India, p. 264, described, POCOCK, J. Bombay Soc. xii, n. spp.

Opisthacanthus fulvipes, Basutoland, p. 412, POCOCK, Ann. Nat. Hist. (vii) iii, n. sp.

Opisthophthalmus wahlbergi, distribution in S. Africa and differentiation into two races, p. 139, *carinatus*, distribution in S. Africa, p. 141, *schlechteri*, descriptions, p. 142, *granifrons*, descriptions of forms, p. 144, *leipoldti*, notes on S. African forms, p. 146, *capensis*, taxonomic and descriptive notes, varieties, etc., p. 147, *pallidipes*, areas of distribution in S. Africa, p. 151, *peringueyi*, colour difference from the type, p. 153, *karrooensis*, areas of distribution in S. Africa, p. 153, *gigas*, form and S. African varieties, p. 154, *austerus*, areas of distribution, p. 155, *chaperi*, areas of distribution and measurements, p. 156, *fossor*, areas of distribution, p. 157, *macer*, areas of distribution, p. 158, *latimanus*, descriptions, p. 159, *pugnax*, variations, p. 161, *glabrifrons*, areas of distribution and geographical variations, p. 161, PURCELL, Ann. S. African Mus. i.

O. ecristatus, Transvaal, p. 411, POCOCK, Ann. Nat. Hist. (vii) iii; *O. crassimanus*, p. 164, *longicauda*, p. 168, *pattisoni*, p. 171, descriptions and distribution in South Africa, PURCELL, Ann. S. African Mus. i. : n. spp.

Palamnæus wroughtoni, India, Belgaum, described, p. 745, POCOCK, J. Bombay Soc. xii, n. sp.

Pandinus imperator gambiensis, Gambia, described, p. 836, POCOCK, P. Z. S. 1899, n. subsp.

Parabuthus flavidus, Bechuanaland, p. 419, POCOCK, Ann. Nat. Hist. (vii) iii; *P. neglectus*, S. Africa, p. 433, *transvaalicus*, Transvaal, p. 434,

schlechteri, Great Bushmanland, p. 434, described, PURCELL, Ann. S. African Mus. i; *P. heterurus*, Somaliland, p. 402, POCOCK in DONALDSON SMITH'S "Through Unknown African Countries" : n. spp.

Scorpio smithii, Somaliland, p. 398, POCOCK, t. c. n. sp.

Scorpiops crassimanus, India, p. 267, POCOCK, J. Bombay Soc. xii, n. sp.

Stenœhirus politus, Kanara, India, described, p. 262, POCOCK, t. c. n. sp.

Urodacus macrurus, N. Queensland, p. 414, POCOCK, Ann. Nat. Hist. (vii) iii, n. sp.

Uroplectes andreæ, Kassai, on the Lonangé River, Upper Congo, p. 835, POCOCK, P. Zool. Soc. London 1899, n. sp.

Tityus argentinus, Argentina, p. 1, BORELLI, Boll. Mus. Torino xiv, No. 336; *T. festæ*, Darien, p. 1, BORELLI, Boll. Mus. Torino xiv, No. 338; *T. kraepelini*, p. 4, *intermedius*, p. 8, Ecuador, BORELLI, t. c. No. 345 : n. spp.

PEDIPALPI.

Abalius willeyi, New Britain, p. 98, pl. x, fig. 2, POCOCK, in WILLEY'S Zool. Res. i, n. sp.

Acanthophrynus, nom. nov. for *Phrynopsis*, previously occupied, p. 241, KRAEPELIN, Das Tierreich, Lief. 8.

Hubbardia, n. g. defined, p. 250, for *pentapeltis*, Palm Springs, California, p. 253, pl. iii, COOK, P. ent. Soc. Washington iv, n. sp.

Hubbardiidæ, nom. nov. for *Schizonotidæ*, previously occupied, p. 249, COOK, t. c.

Hypoctonus africanus, W. Africa?, p. 430, HENTSCHEL, Zool. Anz. xxii, n. sp.

Labochirus cervinus, Mangalore, p. 745, *cervinus* (2), Kanara, p. 745, diagnoses, POCOCK, J. Bombay Soc. xii, n. spp.

Phrynopsis. See *Acanthophrynus*, sup.

Schizomus, nom. nov. for *Schizonotus*, Thorell = *Nyctalops*, Cambridge, previously occupied, p. 249, COOK, P. ent. Soc. Washington iv.

Thelyphonus muricola, Travancore, diagnosis, p. 745, POCOCK, J. Bombay Soc. xii; *T. leucurus*, Solomon Is., p. 99, pl. x, figg. 1–1*a*, POCOCK, in WILLEY'S Zool. Res. i : n. spp.

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TARDIGRADA.

(Vacant.)

XII. MYRIOPODA AND PROTO-TRACHEATA.

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CONTENTS.

INTRODUCTION.

IN number of papers the following Record is about equal to its predecessor and once again the majority of the papers are systematic in character so that very little can be said by way of introduction.

The largest work of the year is ATTEMS' "System der Polydesmiden, Theil I." The classification of this section of Myriopods is always interesting and Attems' memoir promises to mark a step onward in our knowledge of the group. Besides systematic descriptions of new and old species the memoir gives an account of morphology and classification of Polydesmidæ.

POCOCK'S memoir on the Zephroniidæ of the Oriental Region and VERHOEFF'S papers on Palæarctic Myriopods come next in importance.

KENYON has described a curious new Diplopod from Mexico and made it the type of a new family—*Decaporodesmidæ*. COOK on the *Geophiloidea* of the Florida Keys is of importance

The Prototracheata command a great deal of attention and BOUVIER has made more important contributions to our knowledge of this interesting group. WILLEY's paper on the anatomy and development of *Peripatus novæ-britanniæ* expands the preliminary account of this species published last year.

The genera proposed in 1895 by POCOCK for the *Prototracheata* seem to be fairly well adopted now although opinion is somewhat divided as to according them sub- or full generic value. To the three genera defined by him PURCELL adds now a fourth, *Opisthopatus*, founded on some specimens obtained from South Africa. And to these four genera, or subgenera, a fifth must also be added viz. *Paraperipatus* to contain Willey's New Zealand specimens. Willey himself appears to regard this as a subgenus only. Our knowledge of *Peripatus* therefore shows signs of rapid advance in the immediate future.

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Branchial respiration in *Diplopoda*, p. 237, CAUSARD, C.R. Ac. Sci. cxxix.

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i. NEW FORMS.

Coimbra: n. subg. of *Geophilus*, VERHOEFF (34).

W. Germany: n. sp. of *Microchordeuma*, VERHOEFF (32).—Lissa: n. sp. of *Polydesmus*, ATTEMS (3).

Austria: n. spp. of *Lithobiidæ*, VERHOEFF (28).—Hungary: n. sp. of *Atractosoma*, ATTEMS (4).—Cibinsgebirge: n. g. of *Chordeumidæ*, ATTEMS (4).—Cirniz: n. var. of *Glomeridella minima*, ATTEMS (4).—Croatia: n. sp. of *Brachydesmus*.—Fiume: n. sp. of *Brachydesmus*.—Gottschee: n. sp. of *Brachydesmus*.—Istrien: n. sp. of *Brachydesmus*.—Nemila: n. sp. of *Brachydesmus*.—Ragusa: n. sp. of *Brachydesmus*, ATTEMS (3).—Styria: n. g. of *Chordeumidæ*, ATTEMS (4).—Tersato: n. sp. of *Brachydesmus*, ATTEMS (3).—Tirol: n. sp. of *Julus*, ATTEMS (4).—Warasdin: n. sp. of *Atractosoma*, ATTEMS (4).—Weyer on the Enns: n. sp. of *Leptodesmus*, ATTEMS (3).

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Vladivostock: n. sp. of *Levizonus*, ATTEMS (3); n. g. of *Chordeumidæ*, ATTEMS (4).

Tientsin: n. sp. of *Orthomorpha*, ATTEMS (3).

Japan: n. sp. of *Orthomorpha*, ATTEMS (3).

Morocco: n. g. of *Polydesmidæ*, ATTEMS (3).

Tunis: n. var. of *Himantarium hispanicum*, n. sp. of *Pachyiulus*, n. sp. of *Typhloblaniulus*, ATTEMS (4).

Tunis: *Geophilidæ*, 2 n. gg. and 3 n. spp., VERHOEFF (34).

ii. LOCAL FAUNÆ.

Europe, Caves: *Myriopoda*, VERHOEFF (30).

Throndhjem: *Myriopoda*, STORM (24).

Lower Loire: *Myriopoda*, FERRONIÈRE (9).

Forest of Lyons: *Myriopoda*, BRÖLEMANN (5).

Bourg-d'Oisans: *Myriopoda*, BRÖLEMANN (6).

Kharkow: *Myriopoda*, TIMOTHEEW, Zapiski Kharkov Univ. xxxi, p. xxxi.

Roumania: *Myriopoda*, VERHOEFF in JAQUET (11).

Bosnia, Herzogowina and Dalmatia: *Diplopoda*, VERHOEFF (29).

E. Asia: *Myriopoda*, ADOLF (1).

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NEW FORMS.

Africa: *Myriopoda*, 4 n. spp., POCOCK (18).

W. Africa: n. sp. of *Cordyloporus*, ATTEMS (3).

Sokotra: 2 n. spp. of *Odontopeltis*, and n. sp. of *Asanada*, POCOCK (15).

Nossibé: n. g. of *Sulciferinæ*, ATTEMS (3).

Oriental Region.

NEW FORMS AND ADDITIONS.

India: 2 n. spp. of *Arthrosphæra*, *Zephroniidæ*, POCOCK (16).

Ceylon: n. sp. of *Trionopeltis*, n. sp. of *Anoplodesmus*, n. sp. of *Orthomorpha*, ATTEMS (3); *Zephroniidæ*, POCOCK (16).

Burma: *Zephroniidæ*, POCOCK (16).

Malay Archipelago: n. sp. of *Pseudodesmus*, SILVESTRI (21).

Sumatra: n. sp. of *Acanthodesmus*, SILVESTRI (21).—E. Sumatra: n. sp. of *Anoplodesmus*, n. sp. of *Orthomorpha*, ATTEMS (3).

Borneo: n. sp. of *Eurydirorhachis*, SILVESTRI (21); n. sp. of *Prionopeltis*, ATTEMS (3).
Java: 2 n. spp. of *Prionopeltis*, n. sp. of *Orthomorpha*, ATTEMS (3).

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i. NEW FORMS.

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New Guinea, Erima: 2 n. spp. of *Trigoniulus*, n. sp. of *Rhinocricus*, n. sp. of *Eutrachyrachis*, n. sp. of *Atropisoma*, n. sp. of *Diopsiiulus*, SILVESTRI (22).—Tamara Is.: n. sp. of *Trichoproctus*, n. g., n. sp. of *Siphonotus*, n. sp. of *Opisthoporodesmus*, n. g., n. sp. of *Atropisoma*, and n. sp. of *Plusiogonodesmus*, n. g., SILVESTRI (22).
San Cristoval: n. sp. of *Rhinocricus*, POCOCK (17).
New Britain: 2 n. gg. and 9 n. spp. of *Myriopoda*, POCOCK (17).
Lifu, Loyalty Is.: n. sp. of *Bdellotus*, n. sp. of *Mecistocephalus*, POCOCK (17).
Isle of Pines: n. sp. of *Spirobolus*, POCOCK (17).
Solomon Is.: n. g. of *Platyrrhachidæ*, POCOCK (17).

ii. LOCAL FAUNÆ.

New Britain, New Guinea, Loyalty Is., Solomon Is., etc.: *Myriopoda*, POCOCK (17).

Nearctic Region.

i. NEW FORMS.

Florida Keys: 2 n. g. and 4 n. spp. of *Geophiloidea*, COOK (8).

ii. LOCAL FAUNÆ.

Florida Keys: *Geophiloidea*, COOK (8).

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S. America: n. g. of *Strongylosomatidæ*, n. sp. of *Leptodesmus*, ATTEMS (3).
Ecuador: n. sp. of *Biporodesmus*, n. g., ATTEMS (3).
Brazil: n. sp. of *Odontopeltis*, n. sp. of *Leptodesmus*.—Amazons: n. sp. of *Leptodesmus*.—Bahia: n. sp. of *Leptodesmus*.—San Paolo di Olivenza: n. sp. of *Leptodesmus*.—Rio de Janeiro: n. sp. of *Odontopeltis*, n. sp. of *Leptodesmus*, ATTEMS (3).
Quilpué: n. sp. of *Odontopeltis*, ATTEMS (3).
Paraguay: 4 n. spp. of *Leptodesmus*, ATTEMS (3).
Bolivia: n. sp. of *Leptodesmus*, ATTEMS (3).
Chili: *Myriopoda*, 5 n. spp. and 1 n. g., SILVESTRI (20).—Valparaiso: n. sp. of *Myrmekia*, n. g., n. sp. of *Oligodesmus*, n. g., ATTEMS (3).—Valdivia: n. g. of *Leptodesmidæ*, n. g. of *Strongylosomatidæ*, n. sp. of *Odontopeltis*, ATTEMS (3).

ii. Local Faunæ.

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Distribution unknown.

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PROTOTRACHEATA.

I. TITLES.

1. BOUVIER, E. L. Contributions à l'histoire des Péripates américains. Ann. Soc. ent. France lxviii, pp. 385–450, pls. ii–vii.
2. ——. Sur les variations et les groupements spécifiques des Péripates américains. C.R. Ac. Sci. cxxviii, pp. 1344–1346.
3. ——. Observations biologiques sur le *Peripatus capensis*, Grube. Op. cit. cxxix, pp. 971–973.
4. PAULDEN, F. *Peripatus leuckarti*. Tr. Manchester Micr. Soc. 1898, pp. 37–44, pls. vi & vii.
5. PURCELL, W. F. On the South African species of *Peripatidæ* in the collection of the South African Museum. Ann. S. African Mus. i, pp. 331–351.
6. SILVESTRI, F. Distribuzione geografica della *Koenenia mirabilis* Grassi ed altre Artropodi *Peripatoides blainvillei* (Blanch.). Zool. Anz. xxii 1899, pp. 369–371.
7. WILLEY, A. The anatomy and development of *Peripatus novæ-britanniæ*. Zoological Results based on material from New Britain, New Guinea, Loyalty Isles and elsewhere. Part i, pp. 1–52, pls. i–iv & 7 figg. in text.

II. BIOLOGY.

Anatomy and development of *Peripatus novæ-britanniæ*, WILLEY, Zool. Res. i, p. 1.
Variation and specific grouping in American species of Peripatus, p. 1344, BOUVIER, C.R. Ac. Sci. cxxviii.
Movement and habits of *Peripatus capensis*, p. 971, BOUVIER, C.R. Ac. Sci. cxxix.

III. DISTRIBUTION.

S. Africa: 4 n. spp. and 1 n. g. of *Peripatidæ*, PURCELL (5).
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IV. SYSTEMATIC.

Opisthopatus, n. g. defined, p. 349, for *cinctipes*, Dunbrody, Uitenhage Div. of S. Africa, described, p. 351, PURCELL, Ann. S. African Mus. i, n. sp.

Peripatoides blainvillei, Chili, described, p. 370, SILVESTRI, Zool. Anz. xxii.

Peripatopsis, g. defined, p. 334, *capensis*, p. 335, *moseleyi*, p. 338, 4 doubtful species, pp. 339 & 340, *balfouri*, p. 341, doubtful species, p. 349, described, PURCELL, Ann. S. African Mus. i.

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P. leuckarti, described, p. 37, pls. vi & vii, PAULDEN, Tr. Manchester Micr. Soc. 1898.

P. (*Paraperipatus*) *novæ-britanniæ*, p. 4, pls. i & ii, described, WILLEY, Zool. Res. i.

XIII. INSECTA.

By D. Sharp.

CONTENTS.

(a) Coleoptera (incl. Strepsiptera).

(b) Hymenoptera.

(c) Lepidoptera.

(d) Diptera.

(e) Rhynchota or Hemiptera.

(f) Neuroptera (incl. Thysanoptera).

(g) Aptera.

(h) Orthoptera.

INTRODUCTION.

THE literature of Entomology in the present Record appears to be as extensive and important as in any previous year, though the number of Titles is less than it was last year.

Two general works have been published viz. CARPENTER (195) and SHARP (1068) the latter completing a general account, the first Vol. of which was recorded in 1895.

Mr ASHMEAD has continued his attempts to carry out the reformation of classification of Hymenoptera (33–36). DISTANT'S Rhynchotal notes (289 etc.) are of great value in clearing up the obscurities that attended Walker's work. The late Mr MATTHEWS has published a systematic work on *Corylophidæ* and one or two other very small families of *Coleoptera* (798). A description of a second species of Paussid from the New World has been given by WASMANN (1194). REBEL (956) has described some Miocene Lepidoptera found at Pisa; among them being a butterfly allied to *Parnassius*.

The greater part of the systematic descriptive work of the year has, as usual, appeared in faunistic works. The Biologia Centrali-Americana has made good progress, GODMAN (475). The first two parts of the Fauna Hawaiiensis appeared during the year, PERKINS (895), FOREL (412), MEYRICK (828). AURIVILLIUS' comprehensive work will no doubt be found of great use in facilitating the advance of a knowledge of African *Rhopalocera* (46). FALL'S work on *Lathridiidæ* (363) brings the N. American forms into due relation with the European. Two popular works on *Lepidoptera* remarkable for the excellence of their illustrations are recorded, HOLLAND (545), HEINEMANN (525). Holland's butterfly book is probably the cheapest entomological work that has ever been published, the plates being exceptionally good.

From Dr HEYMONS we have an important work on the morphology and development of *Hemiptera* (535). It is concise and clear and has also a considerable bearing on Insect morphology in general. JANET'S memoir (601) is strikingly original; his views as to the composition of the Insect head have we believe not before been advanced, and will perhaps scarcely bear the test of comparison with studies of development. The same subject has been considered by FOLSOM (407) who suggests also a novel, but very different view. The pygidial, or anal glands of *Coleoptera* have received considerable attention from DIERCKX (280–284) and BORDAS (130–133). COMSTOCK and NEEDHAM (244) have concluded their comparative review of the wing-nervures in the various Orders of Insects. DEEGENER considers and repudiates Meinert's views as to the morphology of mouth-parts in *Coleoptera* (272).

The observations of BACHMETJEW (53) on the temperature of Insects, carried out as they were with the aid of good apparatus, are of much value.

The phenomena of histolysis have continued to attract considerable attention, the point at issue being the importance of phagocytes: DE BRUYNE has stated the case (154) fairly; see also ANGLAS (20–22), TERRE (1137, 1138).

In embryology we may point to the paper by SCHWARTZE (1037), on the development of the alimentary canal of *Lepidoptera*, in which the derivation of the mesenteron is discussed, with the result of confirming the views of Heymons. SEURAT'S contribution to the study of parasitic *Hymenoptera* (1060) consists of an account of the anatomy of members of several groups, and of a very detailed study of the post-embryonic develop-

ment of *Doryctes gallicus*, a Braconid. It has an important bearing on the general question of Insect metamorphosis. WAHL's paper (1180) treats of the development in *Diptera*, and is also a study of some important points relating to the tracheal system. The memoir by BOAS (109) brings out well several important considerations as to metamorphosis; and LAMEERE's discourse (736) on this subject, though more metaphysical in nature, is of some interest.

We are indebted to J. H. FABRE for another volume of his valuable series (351) of studies on habits and instinct. HENNEGUY's account of the various forms of parthenogenesis (533) is useful and interesting. SLADEN (1083) has made some very suggestive observations on the habits of the associated bees *Bombus* and *Psithyrus*. PERKINS has called attention to a most remarkable special form of symbiosis between bee and Acari (892). WASMANN again discusses mental capacities and cognate phenomena (1193). RÜBSAAMEN's account of the Natural history of *Cecidomyiidæ* (1006) presents us with a résumé of the great progress that has been made in the study of the very varied habits of these tiny and most fragile creatures. We have an additional account of the experiments of STANDFUSS (1111); and PLATEAU (939) has added another paper to his series of experiments on the relations between insects and flowers.

JUDD's valuable contribution (612), on the efficiency of adaptations against the attacks of birds, must be consulted by all who are interested in this subject. AUSTEN has given a translation of the important article by KOOREVAAR (52) on the habits of *Hypoderma bovis*.

With regard to the post-dating of works, referred to last year, we have noted a case that it is worth while to point out. Two volumes of "Zoologie descriptive" published in Paris and dated 1900, were purchased in London on July 7th 1899. How much earlier than this they were actually published we cannot say.

I. TITLES.*

1. ABEILLE DE PERRIN, E. *Malachides* de Madagascar recueillis par M. Ch. Alluaud. Bull. Soc. ent. France, 1899, p. 194. [*Coleoptera.*]

2. ——. Description d'une espèce nouvelle de *Colydien* des Alpes-Maritimes. T. c. p. 408. [*Coleoptera.*]

3. ABSOLON, K. Über die Fauna des Höhlen des mährischen Devonkalkes (Vorläufige Mittheilung). Zool. Anz. 1899, pp. 315–317 and 321–325. [*Collembola.*]

4. ——. Vorläufige Mittheilung über die Gattung *Dicyrtoma* und *Heteromurus hirsutus* nov. sp. aus den Mährischen Höhlen. T. c. pp. 493–496. [*Collembola.*]

5. ALDRICH J. M. & TURLEY, L. A. A balloon-making fly. Amer. Natural. 1899, pp. 809–812. [*Diptera.*]

6. ALFKEN, J. D. *Pyrameis ida*, n. sp. Ein neuer Tagfalter nebst einer Varietät von den Chatham Islands. Zool. Anz. 1899, pp. 5–8. [*Lepidoptera.*]

7. ——. *Anthrena afzeliella* Kirby und Verwandte. Ent. Nachr. xxv, pp. 102–106. [*Hymenoptera.*]

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* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

8. [ALFKEN, J. D.] Ueber das Leben von *Cerceris arenaria* L. und *rybiensis* L. T. c. pp. 106–111. [*Hymenoptera.*]

9. ——. *Halictus tumulorum* L. und seine Verwandten. T. c. pp. 114–126. [*Hymenoptera.*]

10. *ALLEN, GRANT. Flashlights on Nature. Toronto, 312 pp. Illustrated by F. ENOCK. Cf. Canad. Ent. 1899, p. 303.

11. ALLEN, BLUNNO, FROGGATT & GUTHRIE. Insect and Fungus diseases of fruit-trees and their remedies. Sydney, 1899, 78 pp., numerous plates.

Recorded last year: now published as a separate work with special pagination.

12. ALLUAUD, C. Contributions à la faune entomologique de la région malgache. 6e Note. Bull. Soc. ent. France, 1899, pp. 341–344. [*Coleoptera.*]

13. ——. Contributions à la faune entomologique de la région malgache. 7e Note. T. c. pp. 378–382. [*Coleoptera.*]

14. *ALTUM, B. Zerstörung von Eichen- und Kiefernsaaten durch *Gastropacha quercus* L., und Mittel zur Verhütung derartiger Beschädigungen. Zeitschr. Forst. Jagdw. xxxi, pp. 35–44. [*Lepidoptera.*]
Cf. Zool. Centrlbl. vi, p. 446.

15. ALZONA, C. *Anophthalmus fiorii*, n. sp. Boll. Nat. xix, p. 94. [*Coleoptera.*]

16. ANDRÉ, E. Species des *Hyménoptères* d'Europe et d'Algérie. VIII. Les *Mutillides*, pp. x and 64, plates i–iii.

Forms fasc. 68 of the work: for fasc. 65–67, which have also been published during the year see KIEFFER (636) & MARSHALL (791).

17. ——. *Mutilles* nouvelles de Madagascar. Bull. Mus. Paris, 1899, pp. 34–37. [*Hymenoptera.*]

18. ——. Les types des *Mutillides* de la collection O. Radoszkowski. Ann. Soc. ent. France, 1899, pp. 1–43. [*Hymenoptera.*]

19. ——. Tableaux analytiques illustrés pour la détermination des *Lépidoptères* de France, de Suisse et de Belgique. Misc. ent. vii, pp. 74, etc. etc.

——. [See also SCHULTHESS-SCHINDLER (1027).]

20. ANGLAS, J. Sur l'histolyse et l'histogénèse des muscles des *Hyménoptères* pendant la métamorphose. C.R. Soc. Biol. 1899, pp. 931–933.

21. ——. Sur l'histogénèse des muscles imaginaux des *Hyménoptères*. C.R. Soc. Biol. 1899, pp. 947.

22. ——. Sur l'histolyse et l'histogénèse des muscles des *Hyménoptères* pendant la métamorphose. Bull. Soc. ent. France, 1899, pp. 348–350.

23. [ANON.]. How to collect Mosquitoes (*Culicidæ*). British Museum (Natural history), 1899. 14 pp. [*Diptera.*]

24. ANSORGE, W. J. Under the African sun. London, 1899, 8vo, xiv and 355 pp. Chap. xxii, Butterflies, moths and beetles, pp. 299–322, 1 plate.

All the descriptions are reprints, except two, by the Hon. W. ROTHSCHILD. The title was recorded last year.

25. APFELBECK, V. Zur Kenntniss der paläarktischen *Curculioniden*. Synonymische und zoogeographische Beiträge nebst Beschreibungen neuer Arten von der Balkanhalbinsel. I. *Otiorrhynchini* et *Brachyderini*. Wiss. Mitt. Bosnien, vi, pp. 773–816. [*Coleoptera.*]

26. ——. Ein neuer augenloser *Tapinopterus* (*Coleopt.*) aus der Herzegowina. Ent. Nachr. xxv, p. 147.

27. ——. Neue *Coleopteren* von der Balkan-Halbinsel. T. c. pp. 289–292.

28. ARGOD, A. Description d'un *Cerambycide* nouveau de l'Afrique orientale. Bull. Soc. ent. France, 1899, p. 208. [*Coleoptera.*]

29. ARROW, G. J. On sexual dimorphism in beetles of the family *Rutelidæ*. Tr. ent. Soc. London, 1899, pp. 255–269. [*Coleoptera.*]

30. ——. On sexual dimorphism in the *Rutelid* genus *Parastasia*, with descriptions, of new species. T. c. pp. 479–499, pl. xvii. [*Coleoptera.*]

31. ——. On the *Rutelid* beetles of the Transvaal; an enumeration of a collection made by Mr W. L. Distant. Ann. Nat. Hist. iv, pp. 118–121. [*Coleoptera.*]

32. ——. Notes on the classification of the *Coleopterous* family *Rutelidæ*. T. c. pp. 363–370.

33. ASHMEAD, W. H. Classification of the bees, or the superfamily *Apoidea*. Tr. Amer. ent. Soc. xxvi, pp. 49–100. [*Hymenoptera.*]

34. ——. Classification of the entomophilous wasps, or the superfamily *Sphegoidea*. Canad. Ent. 1899, pp. 145–155, 161–174, 212–225, 238–251, 291–300, 345–357. [*Hymenoptera.*]

35. ——. Super-families in the *Hymenoptera* and generic synopses of the families *Thynnidæ*, *Myrmosidæ* and *Mutillidæ*. J. N. York ent. Soc. vii, pp. 45–60.

36. ——. Classification of the old family *Chalcididæ*. P. ent. Soc. Washington, iv, pp. 242–249. [*Hymenoptera.*]

37. ——. On the genera of the *Cleonymidæ*. T. c. pp. 200–206. [*Hymenoptera.*]

38. ——. On the genera of the *Eucharidæ*. T. c. pp. 235–242. [*Hymenoptera.*]

39. ——. Four new species belonging to the genus *Plenoculus* Fox. Psyche, viii, pp. 337–339. [*Hymenoptera.*]

40. ——. A generic table of the family *Panurgidæ*: a reply to Mr Cockerell's critique on the segregation of *Perdita* Cockerell. T. c. pp. 372–376. [*Hymenoptera.*]

41. ——. Description of the type of *Polydontoscelis* Ashm. T. c. p. 387. [*Hemiptera-Homoptera.*]

42. ——. Four new entomophilous wasps. Ent. News Philad. x, pp. 9, 10. [*Hymenoptera.*]

43. ——. Three new species in the genus *Diploplectron* Fox. T. c. pp. 55, 56. [*Hymenoptera.*]

44. ——. The largest oak-gall in the world and its parasites. T. c. pp. 193–196. [*Hymenoptera.*]

45. ——. *Arthropoda* of the Commander islands. *Hymenoptera*. Fur Seals and Fur-Seal islands, pt. iv, pp. 336–340, *Rhynchota*, pp. 340, 341.

46. AURIVILLIUS, C. *Rhopalocera* æthiopica. Die Tagfalter des æthiopischen Faunengebietes, eine systematisch-geographische Studie. Svenska Ak. Handl. xxxi, No. 5, 561 pp., 6 Plates. [*Lepidoptera.*]
Review by REBEL. Verh. Ges. Wien, 1899, pp. 490–492.

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Lepidoptera. JOANNIS (608); *Rhopalocera* in various Mediterranean localities, DE LA GARDE, pp. 8–11, Entomologist, 1899.—Susa, BROWN, pp. 290, Ent. Rec. pp. 290–293.—Pre St. Didier, TUTT, pp. 226–230, Ent. Rec. xi.—Locarno, CHAPMAN, p. 114, Ent. Mag. 1899.—Grigna, *Rhopalocera*, ALBANI, pp. 108–110, Riv. ital. Sci. Nat. xix.—REBEL, Italy, fossil (956).—Corsica, WALSINGHAM (1185).—MARSHALL, *Heterocera*, pp. 139–141, Ent. Mag. 1899.—NICHOLL, Dalmatia, Bosnia, *Rhopalocera*, pp. 1–8, Ent. Rec. 1899.—Roumania, CARADJA (192), FLECK (389), JAQUET, p. 365, Bull. Soc. Bucarest viii and t. c. pp. 781, 782.—WALSINGHAM, Algeria (1186).—SWINTON, Jerusalem, pp. 135–137, Ent. Mag, 1899.

Diptera. Spain, STEIN (1116), STROBL (1128).—Italy, BEZZI (101, 102), —GRASSI (482), NOÉ (866).—KIEFFER, Algeria (639).

Hemiptera. Bilbao, SEEBOLD & SCHRAMM, pp. 133–141, Actas Soc. espan. 1899.—STEFANI, Italy, *Aphidae* (1115).—THEN, Triest (1139).—MELICHAR, N. Africa (817).—Algeria, *Coccidæ*, COCKERELL (231), MARCHAL (788).—FOKKER, Algeria, pp. 17–27, Tijdschr. Ent. xlii.—Egypt, id. t. c. pp. 28–31.—BREDDIN, Syria (147).

Neuroptera. Spain, *Odonata*, CUNI (263).—BENTIVOGLIO, Italy, *Odonata*, (79).—EATON, Algeria, *Ephemeridae* (332).

Orthoptera. BOLIVAR, Iberia (117).—NÁVAS, Spain (858, 859).—BURR, Herzegovina (166).—List of the *Orthoptera* of Roumania, BURR, pp. 88–91, Ent. Mag. 1891.—Roumania, FREY-GESSNER, pp. 783–786, Bull. Soc. Bucarest viii.—BOLIVAR, Asia Minor (118).—*Orthoptera* found about Jerusalem in 1893 & 1896, SWINTON, Ent. Mag. 1899, pp. 39–42.

(h.) *Caucasus* and *West* and *Central Asia*, including *Arabia* and *Socotra* [see also (a.) and (b.)]: for *Tibet* see 6.

Insecta. GÜNTHER, N. W. Persia (504).

Coleoptera. REITTER, Caucasus (986).—VON HEYDEN, Sinai (534).—ESCALERA, S. Persia, p. 366, Bull. Soc. ent. France 1899.—Arabia, PIC (919, 933), PIC, *Anthicidæ* (928).—BUYSSON, Centr. Asia (179).—BOUCOMONT, Turkestan (138).

Hymenoptera. VACHAL, Aden (1164).

Lepidoptera. ELWES, Altai (337); Socotra, OGILVIE-GRANT (872), HAMPSON (511).—HAMPSON (509), PÜNGELER, Centr. Asia (947).—SAUBER, Centr. Asia (1014).

Diptera. WULP, Aden (1234).—JACOBSON, Centr. Asia (592).

Hemiptera. HORVÁTH, Arabia (567).—KIRKALDY, Socotra (652).—COOLEY, Socotra, *Coccidæ* (247).

Orthoptera. BURR, Socotra (167).

4. AFRICA (TROPICAL & SOUTH); for NORTH AFRICA, see 3 (g.): for COMORO IS., see 5; SOCOTRA, see 3 (h.).

The divisions of the Ethiopian region as deduced from a study of *Rhopalocera*, AURIVILLIUS (46, pp. 496–527).

Insecta. DISTANT (287); DISTANT, *Col. Lep.* (288).

Coleoptera. ARGOD (28), ARROW (29–31), BRENSKE (150, 151), BRENSKE (152, p. 177), CASEY (198), FAIRMAIRE (360), FAUST (366, 368), FLEUTIAUX (390), GESTRO (468), GROUVELLE (499–501), HARTMANN (521), HELLER (529), HORN (555–558), JACOBY (593), JUNOD (616), KERREMANS (632), KOLBE (670, 671, 672, 674), KRAATZ (691, 693 to 700, 702 to 710, 712 to 714, 716 to 718) and Deutsche ent. Zeitschr. 1899, p. 400, KRIEGER (725), LESNE (757), LEWIS (759), LÉVEILLÉ (758), MATTHEWS (798), PÉRINGUEY (889–891), PIC, *Anthicus* (907), PIC (917, 918, 920), RAFFRAY & FAUVEL (952), ROESCHKE (996), ROGER (997), SCHENKLING (1021), SCHULTZE (1030), SCHWARZ (1040–1042), SPAETH (1107), TSCHITSCHÉRINE (1150), WASMANN (1194, 1196, 1197 to 1202), WEISE (1220, 1221).—MAYET, Timbuctoo, Bull. Soc. ent. France 1899, pp. 74, 75.—KRAATZ, *Cetoniidae*, Lake Nyassa, Deutsche ent. Zeitschr. 1899, p. 352.—Sinai, see HEYDEN, 3g.

Hymenoptera. BRAUNS, *Fossoria* (145), EMERY, (339), KONOW (681), MOCSÁRY (835), SCHULTHESS-SCHINDLER (1027), VACHAL (1163 to 1165).

Lepidoptera. AURIVILLIUS (46, 47), BEUTENMÜLLER (99), BUTLER (174 to 178) and Muscat, *Rhopalocera*, P. Zool. Soc. London 1899, pp. 810–812; DISTANT (292), DRUCE (307, 309, 310), HAMPSON (509), KARSCH (619), ROTHSCHILD (1001), ROTHSCHILD in ANSORGE (24), SHARPE (1070, 1072), STAUDINGER (1114), WARREN (1190, 1191); Stray notes, BARRETT, pp. 196–199, Ent. Mag. 1899.

Diptera. RÜBSAAMEN (1007).

Hemiptera. COCKERELL, *Coccidae* (226), COOLEY, *Coccidae* (247), DISTANT (286, 289, 291, 294, 295), GREEN (486, 487), HAGLUND (507), HORVÁTH (561), KARSCH (618), MONTANDON (841) and pp. 216–220, Bull. Soc. Vaudoise XXXV.

Neuroptera. CALVERT (183); KARSCH *Odonata* (620, 621); SJÖSTEDT, *Termitidae* (1078, 1079).

Thysanura, COOK (246).

Orthoptera. BURR (163), KIRBY (648, 649, 651), SAUSSURE (1016), SCHULTHESS (1026).

5. MADAGASCAR, including SEYCHELLES and MASCARENE IS.

Coleoptera. ABEILLE (1), ALLUAUD (12, 13), FAIRMAIRE (352, 354 to 359), FAIRMAIRE incl. Mauritius (353); FAUST (367); FLEUTIAUX Bourbon (390); FLEUTIAUX (393, 396, 398, 401); FLEUTIAUX, BOURGEOIS, LESNE and FAIRMAIRE (402); GESTRO (467, 468), GROUVELLE (501), HORN (560), KERREMANS (632), LEWIS (759), MATTHEWS (798); PIC (905), PIC, *Anthicidae* (927); RAFFRAY (951), RÉGIMBART (965), THERY (1141), TSCHITSCHÉRINE (1150), WASMANN (1194).

Hymenoptera. ANDRÉ (17), EMERY (340), FOREL (411).

Lepidoptera. AURIVILLIUS (46, 47); JOANNIS Seychelles (606); MABILLE (777, 778), WARREN (1191).

Diptera. SPEISER (1109).

Hemiptera. CHARMOY Mauritius *Coccidae* (209), DISTANT (295), HORVÁTH (564, 565), KIRKALDY (654), MELICHAR (816), MONTANDON (841, 842).

Neuroptera. FOERSTER, *Odonata* (404).
Orthoptera. BURR, Nossibé (163); SAUSSURE, Madagascar, Mauritius, Aldabra (1016).

6. TROPICAL and EASTERN ASIA, with JAPAN.

For outskirts see also 3 (a.), (g.), (h.). ARABIA see 3 (h.).

N.B. Every paper referring to Japan is specially pointed out by the addition of the word Japan.

Insecta. Japan. "The Insect World" contains numerous illustrations, in addition to matter in the Japanese language; but we cannot attempt to deal with it.

Coleoptera. ARROW (29, 30), BOILEAU (113, 116); BOILEAU Malacca (111); BOILEAU China (112); BOILEAU Burma (114); BORN China (136); BRENSKE India (152); CSIKI Malacca (260); DESBROCHERS (273); FAIRMAIRE Tonkin (361); FAUST (367), FLEUTIAUX (390, 391), GESTRO (468); GESTRO India China (466); GESTRO Annam Tonkin (467); HARTMANN Ceylon & Perak (521); HARTMANN China (522); HELLER Penang (528); HORN India (555, 559); HORN Ceylon (556); JACOBY (596); KOLBE Ceylon (673); KRAATZ India (692, 715); LÉVEILLÉ (758); LEWIS, incl. Japan (759); MAINDRON (783); MAINDRON Kurrachee (780); MAINDRON India (781); MAINDRON Boutan (782); MATTHEWS (798), PIC (905); PIC Sikkim (906); PIC "Asie: Erythraea" (907); PIC India (917); PLANET Tibet (935); PLANET incl. Formosa (936); PLANET Tonkin (937); RAFFRAY & FAUVEL Ceylon (952); RÉGIMBART (964); REITTER Japan (985); SCHULTZE India (1031); TSCHITSCHÉRINE Japan, and Mongolia (1152); WASMANN (1194, 1195); WEISE China (1222).—List of *Melolonthini* in the Indian Museum, BARLOW, pp. 234–272, Ind. Mus. Notes iv.

Hymenoptera. CAMERON (187, 188); KONOW China (677); KONOW Japan (681, 685); KONOW India (683); KRIEGER incl. Japan (725); MOCSÁRY India (835); VACHAL Burma *Prosopis* (1164).

Lepidoptera. (Liou-Kiou islands, see Insular.)—BARTEL Japan (68); BUTLER (172), DRUCE (309, 310); DUDGEON India (314); GROSE-SMITH (495), HAMPSON (509, 510); LATHY Siam (744); LEECH China, Japan, Corea (750), MOORE (846), NICÉVILLE (864), OBERTHÜR (871), ROTHSCHILD Formosa (1000); ROTHSCHILD & JORDAN Assam (1003); SNELLEN (1099), SWINHOE (1132); THIERRY-MIEG India (1142); WALSINGHAM India (1184); WARREN incl. Formosa (1190); WARREN incl. Japan (1192).—ELWES Himalaya *Parnassius*, Deutsche ent. Zeitschr. Lep. pp. 86, 87.—KIRBY, China, Entomologist 1899, p. 31.—FLETCHER, China, Entomologist 1889, p. 275.—NURSE Cutch, pp. 511–514, J. Bombay Soc. xii.

Diptera. COQUILLET Ceylon (256); GRASSI etc., India (482); KERTÉSZ Singapore (634); PLESKE China (940); WULP (1233).

Hemiptera. BIANCHI China (103); BREDDIN Assam (147); BUCKTON (158, 159); COCKERELL Japan, *Coccidae* (228); DISTANT (293, 294); DISTANT incl. Formosa (289); GREEN Ceylon *Coccidae* (485); GREEN India, *Coccidae* (489); HANDLIRSCH Yunnan (516); HORVÁTH Japan (566); KIRKALDY incl. Japan (659, 662); LULL Japan, *Coccidae* (774), MELICHAR (816), MONTANDON incl. Tibet (840); MONTANDON Yunnan (842).

Neuroptera. FOERSTER Pekin *Odonata* (405); MCLACHLAN China (804).

Thysanoptera. MATSUMURA Japan (797).

Collembola. FOLSOM Japan (409).

Orthoptera. BURR (163); BURR Ceylon (165); BURR China, Japan (168); KIRBY (650).

7. Asiatic Archipelago, including Papua (for islands beyond Papua see 2. Insular).

Coleoptera. Arrow (30); Boileau Sumatra (111); Boileau Borneo (116); Brenske (149); Donckier Borneo (306); Fairmaire Borneo (362); Faust (365); Fleutiaux (390, 391), Gestro (465); Gestro Nias island (468); Gestro Sumatra (469); Hartmann (521), Heller (527, 528); Heller Philippines (526); Jacoby (594), Kraatz (711, p. 313); Kraatz Sumatra (689, 690); Kraatz Nias (701); Kraatz Dammer (710); Kraatz Borneo (715, 719, 720); Léveillé (758), Lewis (759), Matthews (798), Raffray & Fauvel (952), Régimbart (964); Régimbart New Guinea (967); Schenkling (1020, 1021); Senna Celebes (1059); Sharp Borneo (1066); Wasmann (1194), Weise (1222).

Hymenoptera. Konow Java (681); Krieger (725), Mantero (784), Mocsáry (835).

Lepidoptera. Butler (172, 174); Dohrn Sumatra (301); Druce (307, 309, 310); Fruhstorfer (448); Fruhstorfer Borneo *Rhopalocera* (440); Fruhstorfer Java (441); Fruhstorfer Philippines (442); Fruhstorfer Borneo (443); Fruhstorfer Nias (445, 450); Fruhstorfer Philippines (447); Fruhstorfer Celebes *Euploeides*, Stettin. ent. Zeit. lx, pp. 145–159.—Grose-Smith (495); Hagen N. Guinea (506); Hampson (509); Horváth & Mocsáry N. Guinea (568); Lathy (743, 744), Moore (846), Rothschild (1000); Rothschild Buru (1001); Rothschild & Jordan (1003); Semper Philippines (1058); Snellen (1099, 1100); Snellen Java (1101); Swinhoe Borneo (1132); Warren (1190, 1192).

Diptera. Kertész (634); Kertész N. Guinea (635); Meijere Java (815); Wulp (1233).

Hemiptera. Breddin, Lombock, Java (146); Horváth (564), Kirkaldy (653); Melichar New Guinea (816); Montandon (840); Rübsaamen Sumatra *Psyllidæ* (1007).

Neuroptera. Foerster *Odonata* (405); Krüger *Odonata* (727).

Thysanura. Cook Java (246).

Orthoptera. Burr (163); Burr Java (164); Burr (165), Fritze (434), Kirby (650).

8. Australia and Tasmania (for New Zealand see 2. Insular).

Insecta. Plenty river, Best, pp. 151–154, Victorian Natural. xv.

Coleoptera. Blackburn (106, 107), Fleutiaux (400), Horn (557), Lea (745, 746, 747), Lewis (759), Matthews (798), Rainbow (954), Schenkling (1020), Spaeth (1107), Weise (1222).

Hymenoptera. Friese (428), Froggatt (435), Krieger (725), Mocsáry (835), Vachal *Prosopis* (1164).

Lepidoptera. Druce (310), Grose-Smith (495), Hampson (509), Lower (767), Rothschild & Jordan (1003), Swinhoe (1132), Tepper (1136), Turner (1156), Warren (1190, 1192).

Diptera. Coquillett (256).

Hemiptera. Distant (289, 293, 294), Kirkaldy (653, 659, 663), Montandon (840).

Coccidæ. Cockerell (232), Froggatt (439 a), Fuller (456), Lidgett (761, 762).—Exotic *Coccidæ* in Australia, Lidgett, p. 162, Sci. Gossip vi.

Odonata. Foerster (405), Tepper (1135).

Collembola. Lubbock Tasmania (768).

9. North America.

Commander islds. *Insecta*, see Insular. Bermudas, see Antilles.

Insecta. Godman (475), Hubbard (576); Scudder, *Hemiptera*, *Diptera* (1051).—The imported Insects of the United States, Krüger (728).—Introduced Insects at Ottawa, Harrington (519).—Biscayne Bay, Slosson, pp. 94, etc., Ent. News Philad. x.—Southern Arizona, Schwarz, pp. 340–342, P. ent. Soc. Washington iv.—New Mexico, "Vernal phenomena in the arid region," Cockerell, Amer. Nat. 1899, pp. 39–43.—Vancouver isld. Taylor, Ottawa Natural. 1898, pp. 57–59.

Coleoptera. Casey (198, 199), Cockerell (238), Fall (363, 364); Hopping, California on *Ceanothus* (550); Hubbard (578), Kerremans (633), Lewis (759); Linell, incl. Lower California (766); Matthews (798), Schwarz (1039), Wasmann (1204).—Massachusetts, Knab, p. 311, Canad. Ent. 1899.—Halifax N. S., Evans, pp. 320, 321, Canad. Ent. 1899.—Schwarz, pp. 187, 209, 216, 263, P. ent. Soc. Washington iv.—The Coleoptera of Canada, Wickham (231).—Canada, Wickham, Canad. Ent. pp. 21, etc.—Canadian *Longicornia*, Harrington, pp. 107, 108, Canad. Ent. 1899.—Ottawa *Cerambycidæ*, Harrington, Ottawa Natural. xiii, pp. 57–68.—Boucheville, Chagnon, Nat. Canad. xxvi, pp. 21–26.—Canada, *Cychrus viduus*, Chagnon, Nat. Canad. xxvi, p. 187.—Faunal changes in the vicinity of Cincinnati, Dury, pp. 139–141, J. Cincinnati Soc. xix.—Buena Vista Valley, Wickham, pp. 120–123, Ent. News Philad. x.—McPherson, pp. 37–40, Canad. Ent. 1899.—Colorado Springs, Wickham, pp. 5–8, Ent. News Philad. x.

Hymenoptera. Ashmead (39, 42, 43); Ashmead, list of entomophilous *Sphegoidea* (34); Cockerell (233, 234, 236); Cockerell & Porter (242, 243), Dyar (330), Fowler (414–417), Fox (418), Harrington (518), Konow (677); Konow Alaska (683); Matthews (798), Mocsáry (834).—Kansas bees, Cockerell, pp. 3, 4, Ent. News Philad. x.—Texas *Aculeata*, Birkman, pp. 244, 245, Ent. News Philad. x.

Lepidoptera. Beutenmüller (100), Cockerell (239), Dyar (315, 317, 321, 323, 324–326), Holland (545); New Brunswick, McIntosh (803).—Skinner (1081, 1082), Slosson (1087), Smith (1088–1096), Strecker (1125, 1126).—New Brunswick, *Noctuidæ*, McIntosh, Bull. Soc. N. Brunswick iv, pp. 209–222.—Gibson, *Lepisesia*, Brit Columbia, Canad. Ent. 1899, p. 370.—Moffat Canada, pp. 17, 18, Canad. Ent. 1899.—Cranberry N. C., *Rhopalocera*, Thomas, p. 128, Ent. News Philad. x.—A list of Manitoba moths, Part ii, Hanham, Canad. Ent. 1899, pp. 49–52: Part iii, t. c. pp. 197–206.—Manitoba, Heath, p. 95, Canad. Ent. 1899.—Montreal, Stevenson, p. 287, Canad. Ent. 1899.—*Noctuidæ* of Webster, N. H., Goodhue, pp. 221–236, Ent. News Philad. x.—Rye N. Y., Bird, pp. 134–136, Canad. Ent. 1899.—Ohio, Dury, p. 142, J. Cincinnati Soc. xix.—Missouri *Sphingidæ*, Rowley, pp. 10–12, Ent. News Philad. x.—Virginia, *Catocala*, Smyth, Ent. News Philad. x, pp. 282–286.—New Mexico butterflies, Cockerell, pp. 65, 66, Canad. Ent. 1899.

Diptera. Brauer (144), Coquillett (249, 251–254), Doane (296), Hough (569, 570, 572), Kincaid (645).

Aphaniptera. Baker (58).

Hemiptera. Ashmead (41); Ball (59, 60, 61), Heidemann (524), Montandon Florida (839), Uhler (1160).—Quaintance *Aleurodidæ* (949).

Coccidæ. Cockerell (223, 228, 229, 231); Cockerell, pp. 257–259, J. N. York ent. Soc. vii.—Cockerell, Dawson City (230); Cockerell & King (240), Cockerell & Parrott (241), Cooley (247), Ehrhorn (335, 336), Hunter (580), King (646), Lull (774), Newell (863), Parrott (883, 884), Tinsley (1143), Tinsley & King (1144).—Massachusetts *Coccidæ*, King, pp. 109–112, 139–143, Canad. Ent. 1899.

Neuroptera. BANKS (63, 64), CURRIE (264); KELLICOTT, *Odonata* (624); NEEDHAM, *Odonata* (861).

Mallophaga. KELLOGG (627), KELLOGG & CHAPMAN (628).

Thysanura and *Collembola.* BANKS (65); COCKERELL, p. 71, Ent. News Philad. x; COOK (246).

Orthoptera. BRUNER (153), HANCOCK (513, 514), MCNEILL (809, 810), MORSE (853), SCUDDER (1043–1050).—Distribution of New England *Acridiidæ* and causes influencing it, MORSE (854).

10. CENTRAL AMERICA (MEXICO to PANAMA incl.).

Insecta. GODMAN (475).

Coleoptera. ARROW (32), BELON (76, 77), BOILEAU (115), CASEY (198), GRIFFINI (492), LEWIS (759); LINELL, Lower California, p. 181, P. ent. Soc. Washington iv.

Hymenoptera. ASHMEAD (44), COCKERELL (233, 235, 237), FRIESE (426), KONOW (678).

Lepidoptera. BUTLER (173), DRUCE (307, 309), DYAR (317), GODMAN (474), HAMPSON (509), PREISS (945), SCHAUS (1019), SNELLEN (1099); STRECKER, *Rhopalocera* (1126).—BARRETT, p. 293, Ent. News Philad. x.

Diptera. DOANE (296).

Hemiptera. DISTANT (290), KIRKALDY (663).

Coccidæ. COCKERELL (224); COCKERELL, pp. 257–259, J. N. York ent. Soc. vii; COCKERELL & PARROTT (241).

Odonata. CALVERT, inc. Lower California (185); KIRBY (647).

Mallophaga. KELLOGG & CHAPMAN, Panama and Lower California birds (628).

Orthoptera. BURR (163), HANCOCK (514), SCUDDER (1045).

11. ANTILLES.

Insecta. GODMAN (475).

Coleoptera. KERREMANS (633), MATTHEWS (798), OLIVIER (875).

Lepidoptera. DRUCE, Cuba (307); HAMPSON (509); KAYE, Jamaica, Ent. Rec. xi, pp. 144–148.—LATHY, Porto Rico, Haiti (742).

Diptera. COQUILLETT, Porto Rico (252); DOANE (296).

Hemiptera. DISTANT (294); KIRKALDY, Jamaica (661).—Bermudas *Coccidæ*, KING, p. 350, Psyche viii.

Orthoptera. MORSE (853).

12. SOUTH AMERICA, including TRINIDAD.

Insecta. GODMAN (475).—Chili: numerous local lists in Revist. Chilena, Vols. i–iii.

Coleoptera. ARROW (32), AURIVILLIUS (48), BELON (76, 78); BERG, Tierra del Fuego (82); BERG, Argentina, *Rhyephenes*, Comun. Mus. Buenos Aires i, pp. 151–154; BOILEAU (114, 115), BOURGEOIS (139), CASEY (198), FLEUTIAUX (390, 391, 392, 394, 397, 399); FLEUTIAUX, Chili (395); GOUNELLE (476), GRIFFINI (492, 493), JACOBSON (590), JACOBY (595, 597), KERREMANS (633), LEWIS (759), MATTHEWS (798), OHAUS (873), OLIVIER (876), PIC (908); PIC, *Xylophilus* (907); PIC, *Anthicidæ* (927, 928); PIC, *Bruchidæ* (926); RAFFRAY & FAUVEL (952), RÉGIMBART (966, 967).—RÉGIMBART, Bolivia, *Dytiscidæ*, Boll. Mus. Torino xiv, No. 340.—SPAETH (1107).—WASMANN (1194, 1205), WEISE (1222, 1224).

Hymenoptera. CAMERON Chili (189); FOREL (410, 411), FOX (419, 420); FOX, Trinidad (418); FRIESE (426), KONOW (678, 679, 683, 684, 685), MOCSÁRY (834), PÉREZ (888), REED (961).

Lepidoptera. BERG (80), BÖNNINGHAUSEN (123), BUTLER (173), CALVERT (186), DOGNIN (298–300), DRUCE (307–310), DYAR (318), GODMAN (474), GROSE-SMITH (495), HAMPSON (509); Trinidad, KAYE, pp. 57–59, Ent. Rec. xi.—LATHY (743), MENGEL (818), PREISS (945), SCHAUS (1019), SNELLEN (1099); STAUDINGER, Tierra del Fuego (1112); STICHEL (1119, 1121), STRECKER (1125, 1126), WEYMER (1227, 1228).

Diptera. BERG (83).

Hemiptera. BAKER (57), BERG (81), BERGROTH (89, 90), DISTANT (289, 294), HAGLUND (508), KIRKALDY (653), KIRKALDY, Chili (659, 663); KIRKALDY, Boll. Mus. Torino xiv, Nos. 347, 348 and 350–352.—MONTANDON (839, 840); MONTANDON, incl. Patagonia (843); REED (962).—COCKERELL, *Coccidæ* (225, 227); HEMPEL, *Coccidæ* (531); HEMPEL, *Aleurodidæ* (530).—SCHWARZ, *Psyllidæ*, incl. Trinidad (1038).

Neuroptera. BERG *Mantispidæ* (84).

Aptera. SILVESTRI (1075).

Orthoptera. BOLIVAR (119), BURR (163–165), HANCOCK (514), SCUDDER (1045).

PALÆO-ENTOMOLOGY.

[*Cf.* MEUNIER (821–827), REBEL (956), SCHLECHTENDAL (1024).]

Mourloniella n. g. for *M. solenhofensis* n. sp., a problematic *Coleopteron*, MEUNIER (821).

Lepidoptera. *Doritites* n. g., *bosniaskii* n. sp., Miocene of Gabbro, Italy, REBEL, SB. Ak. Wien xcvii, pp. 734–741.

Lycaenites n. g., *gabbroensis* n. sp., REBEL, t. c. pp. 742–744.

Arctiites n. g., *deletus* n. sp., a miocene fossil from Gabbro, Italy, REBEL, p. 732, t. c.

Diptera. Notes on Loew's types of fossil *Diptera*, MEUNIER, Miscell. ent. vii, pp. 161 etc.

Jentzschiella n. g. near *Ceratopogon*, id. t. c. p. 162.

Palæomyopa n. g. *Conopidæ* from tertiary amber, MEUNIER, p. 145, cut, Bull. Soc. ent. France 1895.

Gheynia n. g., *Dolichopodidæ*, for some Insects in Baltic amber, MEUNIER, p. 322, op. cit. 1899.

Palæopœcilostola n. g., *Tipulidæ*, Baltic amber, MEUNIER, p. 334, t. c.

Pœcilostiella n. g., id. l. c.

Gonomyiella n. g., id. p. 335.

Heteropœcilostola n. g., id. t. c. p. 358.

Palæoerioptera n. g., id. t. c. p. 359.

Palæogonomyia n. g., id. t. c. p. 359.

Haploneura and *Critoneura* LÖW, characters, MEUNIER, p. 392, t. c.

Hemiptera-Heteroptera. *Naucoris rottensis*, Tertiary strata of Rott, SCHLECHTENDAL (1024), n. sp.

III. SYSTEMATIC.

N.B.—The reference numbers collected under the headings of the various groups refer to "Titles" on pp. 4–67, and are intended to give, in each case, a complete list of all memoirs containing anything of importance in connection with the group.

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(A.) *COLEOPTERA.*

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DYTISCIDÆ.

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Methles indicus, Chota-Nagpore, RÉGIMBART, p. 241, Ann. Soc. ent. France 1899, n. sp.

Necterosoma costipenne, Tasmania, LEA, p. 526, P. Linn. Soc. N. S. Wales xxiii, n. sp.

Neptosternus circumductus, India, p. 268, *brevior*, Sumatra, p. 270, RÉGIMBART, Ann. Soc. ent. France 1899, n. spp.
Platambus excoffieri, China, RÉGIMBART, p. 281, t. c. n. sp.
Platynectes coriaceus, Assam, p. 282, *guttula*, China, *polygrammus*, Asia, p. 283, *decastigma*, Ternate, p. 286, *deletus*, Japan, p. 287, RÉGIMBART, t. c.; *P. gagatinus*, *subaenescens*, Australia, LEA, p. 527, P. Linn. Soc. N. S. Wales xxiii; *P. æquatorius*, W. S. America, RÉGIMBART, Boll. Mus. Torino xiv, No. 341, p. 2 : n. spp.
Pleurodytes n. g. for *Hydaticus dineutoides*, RÉGIMBART, p. 331, Ann. Soc. ent. France 1899.
Rhantus advena, ♀ characters, RÉGIMBART, Boll. Mus. Torino xiv, No. 341, p. 5.
R. bouvieri, Madagascar, RÉGIMBART, p. 374, Bull. Soc. ent. France 1899; *R. sikkimensis*, India, p. 306, *thibetanus*, Mou-Pin, p. 307, *dispar*, Java, p. 308, *annamita*, Annam, p. 309, *rugulosus*, India, p. 310, RÉGIMBART, Ann. Soc. ent. France 1899 : n. spp.
Sandracottus bizonatus, Borneo, RÉGIMBART, p. 336, t. c. n. sp.
Sternopriscus minimus, Australia, LEA, p. 525, P. Linn. Soc. N. S. Wales xxiii, n. sp.

GYRINIDÆ.

[Cf. BORDAS (130), DIERCKX (280), FAIRMAIRE (352), RÉGIMBART (967).]

Dineutes macrochirus, p. 196, *loriæ*, p. 197, New Guinea, RÉGIMBART, Ann. Mus. Genova xl, n. spp.
Macrogyrus reticulatus, New Guinea, RÉGIMBART, p. 198, t. c. : n. sp.
Orectogyrus grisescens, *perrieri*, Madagascar, FAIRMAIRE, p. 515, Ann. Soc. ent. Belgique 1899, n. spp.

HYDROPHILIDÆ.

[Cf. DEEGENER (272), FISCHER-SIEGWART (387), PORTA (942), REITTER (978), E. A. SCHWARZ (1039).]

Morphology and development of mouth-parts of *Hydrophilus*, DEEGENER (272).
Oviposition of *Hydrophilus piceus*, FISCHER-SIEGWART (387).
Cryptopleurum cerei, Arizona, SCHWARZ, p. 8, Psyche VIII, Suppl. i, n. sp.
Hydræna (*Hoplydræna*) *fiorii*, Italy, PORTA, p. 29, Misc. ent. vii, n. sp.
Laccobius pallidissimus, Turkestan, REITTER, p. 197, Deutsche ent. Zeitschr. 1899, n. sp.
Macrocercyon n. n. for *Trichopoda* Br., ALLUAUD, p. 379, Bull. Soc. ent. France 1899.
Ochthebius (*Homalochthebius*) *perdurus*, Mongolia, REITTER, p. 198, Deutsche ent. Zeitschr. 1899, n. sp.
Pachysternum capense = (*C. rufocaudatum* Fairm.), ALLUAUD, p. 379, Bull. Soc. ent. France 1899.
Sphæridium chrysomelinum = (*sexguttatum* Fairm.), ALLUAUD, p. 379, t. c.

STAPHYLINIDÆ.

[The following memoirs relate to *Staphylinidæ*, viz.:—BERNHAUER (93–96), BLACKBURN (106), BORDAS (130), DIERCKX (285), FAIRMAIRE (357), FAUVEL (370–372), FIORI (382, 384), GERHARDT (464), KEMPERS (629), KRAATZ (698, 716), KRAUSS (722), LEA (745), RAFFRAY & FAUVEL (952), REITTER (977, 979, 982), SCHWARZ (1039), SHARP (1066), WASMANN (1195, 1198–1204).]

The wings of *Staphylinidæ*, KEMPERS, pp. 197–201, pl. xiii, Tijdschr. Ent. xlii.

The exsertile anal glands, DIERCKX (285).

Staphylinidæ found with *Dorylus*, WASMANN, p. 175, Deutsche ent. Zeitschr. 1899.

Achenium medeanense, Algeria, FAUVEL, p. 97, Rev. Ent. franc. xviii, n. sp.

Ærostiba subg. n. cf. *Atheta*.

Amischa filum and *cavifrons* distinguished, BERNHAUER, p. 424, Verh. Ges. Wien 1899.

Astenus filiformis, larva, PEYERIMHOFF, p. 287, Bull. Soc. ent. France 1899.

Astilbus hæmaticus, p. 39, *angularis*, *aeneicollis*, p. 40, Africa, FAUVEL, Rev. Ent. franc. xviii, n. spp.

Atheta marcida var. n. *sexualis*, FAUVEL, p. 98, t. c.

A. (*Pseudothinœcia* subg. n.) *puellaris*, Dalmatia, BERNHAUER, p. 21, Verh. Ges. Wien 1899; *A.* (*Oreostiba*) *hercegovinensis*, Prenj, BERNHAUER, p. 250, t. c.; *A.* (*Liogluta*) *monacha*, Bosnia, p. 425, *A.* (*Aerostiba* subg. n.) *interurbana*, Stockerau, p. 426, *A.* (*Disopora*) *montenegrina*, Podgorica, p. 427, BERNHAUER, t. c. : n. spp.

Blepharymenus=(*Echidnoglossa* Woll. and *Colusa* Casey) FAUVEL, p. 47, Rev. Ent. franc. xviii.

B. mirandus, Nice, FAUVEL, l. c. n. sp.

Cilea rivularis, *amabilis*, Australia, LEA, p. 531, P. Linn. Soc. N. S. Wales xxiii, n. spp.

Conosoma primum, p. 532, *secundum*, *tertium*, p. 533, *quartum*, p. 534, *quintum*, *sextum*, p. 535, *septimum*, *octavum*, p. 536, *nonum*, *decimum*, p. 537, *limnorioides*, *scutellare*, p. 538, *lanceolatum*, p. 539, Australia, LEA, t. c. n. spp.

Delibius, n. g. *Pygostenini* near *Xenidus*, p. 13, for *D. longicornis* n. sp., Sumatra, p. 14, FAUVEL, Rev. Ent. franc. xviii.

Delius n. g. *Pygostenini* (n. tribe), for *D. duplex*, n. sp. Sumatra, FAUVEL, p. 11, t. c.

Demera n. n. for the following *Derema*, FAUVEL, p. 100, t. c.; *D. fauveli*, Natal, WASMANN, p. 404, Deutsche ent. Zeitschr. 1899, n. sp.

Derema n. g. near *Falagria*, p. 41, for *D. foveicollis*, Capetown, *senegalensis*, Badumbé, n. spp., FAUVEL, Rev. Ent. franc. xviii. [Cf. *Demera*.]

Deubelia n. g. near *Ocalea*, p. 15, for *D. diabolica*, n. sp. Kronstadt, p. 16, BERNHAUER, Verh. Ges. Wien 1899.

Diglotta n. n. for *Diglossa* Hal., *D. mersa* and *sinuaticollis* characters, CHAMPION, pp. 264, 265, Ent. Mag. 1899.

Dinarda clavigera, Abyssinia, FAUVEL, p. 33, Rev. Ent. franc. xviii, n. sp.

Dinusa myrmidon, Abyssinia, FAUVEL, p. 34, t. c. n. sp.

Dioxeuta n. g. *Myrmedoniinæ*, p. 205, for *D. microps* n. sp., Sarawak, p. 206, SHARP, Ent. Mag. 1899.

Dorylobius n. g. near *Ilyobates*, for *D. sulcicollis*, n. sp., Capetown, pl. i, f. 17, RAFFRAY, Rev. Ent. franc. xviii, p. 25.

Drephopylla subg. n. of *Phyllodrepa*, for *D. heterocera*, n. sp., Italy, FIORI, p. 90, Atti Soc. Modena xxxii.

Echidnoglossa cf. *Blepharymenus*.

Ecitonusa foreli, N. Carolina, WASMANN, p. 410, Deutsche ent. Zeitschr. 1899, n. sp.

Euristus n. g. near *Euryporus*?, p. 23, for *E. globus*, n. sp., Gaboon, p. 24, FAUVEL, Rev. Ent. franc. xviii.

Fauvelia wasmanni, Bolivia, FAUVEL, p. 33, t. c. n. sp.

Geodromicus suturalis, and *plagiatus* distinguished, BERNHAUER, p. 437, Verh. Ges. Wien 1899.

Geostiba luigionii, Rome, p. 430, *princeps*, Spain, p. 431, BERNHAUER, Verh. Ges. Wien 1899, n. spp.

Homœocerus n. g. near *Glyphesthus*, for *Homorocerus* (Kr. & Solsky nec

Boh.), p. 27, and *H. mimus*, p. 29, *simplex*, p. 30, n. spp., Africa, FAUVEL, Rev. Ent. franc. xviii. [Cf. *Mœocerus*, infra.]

Homorocerus Boh., synonymy and systematic position, FAUVEL, p. 27, t. c.

Lathrobium victoris, Mostar, BERNHAUER, p. 111, Verh. Ges. Wien 1899; *L. muelleri*, Tyrol, BERNHAUER, p. 435, t. c. : n. spp.

Leistotrophus? giganteus, E. Africa, KRAATZ, p. 112, Deutsche ent. Zeitschr. 1899, n. sp.

Leptacinus parumpunctatus, var. n. *rubricollis*, REITTER, p. 157, Wien. ent. Zeit. 1899.

Leptusa puellaris=(*simoni* Epp.), relations of *Leptusa* and *Sipalia*, BERNHAUER, p. 430, Verh. Ges. Wien 1899.

L. gracilipes, Austria, KRAUSS, p. 203, Wien. ent. Zeit. 1899; *L. subalpina*, Italy, FIORI, p. 101, Atti Soc. Modena xxxii; *L. crenulata*, Reynosa, BERNHAUER, p. 429, Verh. Ges. Wien 1899 : n. spp.

Mandera n. g. *Pygostenini*, for *M. sanguinea* n. sp. Zanzibar, FAUVEL, p. 15, Rev. Ent. franc. xviii.

Medon apfelbecki, Bosnia, BERNHAUER, p. 25, Verh. Ges. Wien 1899; *M. basalis*, Ordubad, REITTER, p. 282, pl. iv, fig. 1, Wien. ent. Zeit. 1899 : n. spp.

Mimocete n. g. *Pygostenini* (n. tribe), p. 7, for *M. torpilla*, *balæna*, p. 8, *solea*, *phocæna*, p. 9, Africa, *phoca*, Ceylon, p. 10, n. spp., FAUVEL, Rev. Ent. franc. xviii.

Mœocerus, n. n. for the above *Homœocerus*, FAUVEL, p. 100, t. c.

Myrmedonia apfelbecki, Bosnia, BERNHAUER, p. 249, Verh. Ges. Wien 1899; *M. lobopeltina*, Natal, WASMANN, p. 403, Deutsche ent. Zeitschr. 1899; *M. dorylina*, Port Elizabeth, WASMANN, p. 174, t. c.; *M.* (*Glossacantha*) *tridens*, p. 149, pl. i, f. 2, *heimi*, p. 150, *M. sculpticollis*, p. 151, India in nests of *Termes obesus*, WASMANN, t. c. : n. spp.

Ocyplanus n. g. near *Myrmecopora*, for *O. formicarius*, n. sp., Senegal, FAUVEL, p. 43, Rev. Ent. franc. xviii.

Ocyusa bimaculata, Tunis, FAUVEL, p. 98, t. c. n. sp.

Omalium (*Phyllodrepa*) *cacti*, Arizona, SCHWARZ, p. 9, Psyche viii, Supp. i, n. sp.

Oxypoda danubiana, Stockerau, p. 107, *kaufmanni*, Bosnia, p. 108, *O.* (*Bessopora*) *deubeli*, Siebenbürgen, BERNHAUER, Verh. Ges. Wien 1899; *O. corsica*, Corsica, BERNHAUER, p. 423, t. c.; *O. punica*, Tunis, FAUVEL, p. 99, Rev. Ent. franc. xviii : n. spp.

Pæderus; table of Australian, BLACKBURN, p. 22, Tr. R. Soc. S. Austral. xxiii.

P. tweedensis, p. 22, *koebelei*, p. 23, Australia, id. t. c. n. spp.

Philonthus longicornis=(*Cafius lætabilis* Oll.), LEA, p. 540, P. Linn. Soc. N. S. Wales xxiii; *P. sp rmophili* distinguished from *sordidus*, BERNHAUER, p. 22, Verh. Ges. Wien 1899; *P. asphaltinus*, characters, habitat, p. 434, *P. apenninus* and *immundus* distinguished, p. 435, BERNHAUER, t. c.

P. diversipennis, Russia, BERNHAUER, p. 24, t. c. n. sp.

Philusina aterrima, *incola*, Natal, WASMANN, p. 405, Deutsche ent. Zeitschr. 1899, n. spp.

Phocasoma n. g., for *P. mirabile* n. sp., Cameroons [said in note to be probably *Mimocete torpilla* Fauv., q. v.], KRAATZ, t. c. p. 363.

Phyllodrepa, cf. *Drephopylla*.

Phytosus balticus and *nigriventris*, characters, British localities, CHAMPION, p. 1, Ent. Mag. 1899.

Pinophilus quadraticollis, p. 540, *jejunus*, p. 541, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii, n. spp.

Porus cupulifer, Senegal, p. 36, *natalensis*, *longicollis*, p. 37, S. Africa, FAUVEL, Rev. Ent. franc. xviii, n. spp.

Pseudothinœcia subg. n., cf. *Atheta*.

Pygostenini, new tribe, FAUVEL, p. 5, Rev. Ent. franc. xviii.
Pygostenus, characters, WASMANN & FAUVEL, p. 16, pl. i, t. c.
P. kraatzi, p. 18, *carinellus*, *gabonensis*, p. 19, *punctatus*, p. 21, Africa, FAUVEL, t. c. n. spp.
Quedius resplendens=(*alpinus* Fior.), *cincticollis*=(*carnicus* Fior.), FIORI, p. 160, Atti Soc. Modena xxxi; *Q. dubius* var. n. *flavolineatus*, BERNHAUER, p. 433, Verh. Ges. Wien 1899; *Q. scitus* var. n. *meledanus*, REITTER, p. 288, Deutsche ent. Zeitschr. 1899; *Q. kraatzi*, larva, DONISTHORPE, p. 266, Ent. Rec. 1899.
Q. satanas, Italy, BERNHAUER, p. 432, Verh. Ges. Wien 1899; *Q. atricapillus*, Syria, REITTER, p. 273, Deutsche ent. Zeitschr. 1899 : n. spp.
Scopœus signifer, Tunis, FAUVEL, p. 72, Rev. Ent. franc. xviii, n. sp.
Staphylinus ophthalmicus var. n. *hypsibatus*, BERNHAUER, p. 433, Verh. Ges. Wien 1899.
Stenus flavipes var. n. *payeri*, KRAUSS, p. 204, Wien. ent. Zeit. 1899.
S. neglectus, Germany, GERHARDT, p. 220, Deutsche ent. Zeitschr. 1899, and p. 20, Zeitschr. ent. Breslau xxiv; *S. obscuripes* (=*carpathicus* var. Gangl.), Siebenbürgen, BERNHAUER, p. 26, Verh. Ges. Wien 1899; *S. longiventris*, p. 542, *indistinctus*, *villosiventris*, p. 543, *ianthinipennis*, p. 544, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii : n. spp.
Tachinopsis n. g. *Quediorum*, for *T. setigera*, n. sp., Africa, FAUVEL, p. 22, pl. i, figg. 14 & 15, Rev. Ent. franc. xviii.
Tachyporus minutus, *rarus*, Australia, LEA, p. 530, P. Linn. Soc. N. S. Wales xxiii, n. spp.
Tectusa n. g. for *Leptusa difficilis* Epp., BERNHAUER, p. 18, Verh. Ges. Wien 1899.
Termitodiscus n. g. *Aleocharini*, for *T. heimi* n. sp., pl. i, f. 1, in nests of *Termes obesus*, India, WASMANN, p. 147, Deutsche ent. Zeitschr. 1899; *T. splendidus*, Natal, WASMANN, p. 401, t. c. n. sp.
Termitana n. g. near *Termitochara*, for *T. perrieri*, n. sp., Madagascar, FAIRMAIRE, p. 316, Bull. Soc. ent. France 1899.
Termitopulex n. g. near *Termitobius*, p. 37, for *T. grandicornis*, n. sp., Abyssinia, p. 38, FAUVEL, Rev. Ent. franc. xviii.
Termitotropha n. g. *Aleocharini*, p. 178, for *oneili*, n. sp., Cape Colony in nests of *Termes*, p. 179, pl. ii, f. 9, WASMANN, Deutsche ent. Zeitschr. 1899.
Thinobius silvaticus, Styria, BERNHAUER, p. 436, Verh. Ges. Wien 1899; *T. gilvus*, Corfu and N. Africa, FAUVEL, p. 71, Rev. Ent. franc. xviii : n. spp.
Trilobitideidæ, n. subfam. for the following, FAUVEL, p. 3, t. c.
Trilobitideus n. g. p. 1, for *T. mirabilis*, n. sp., Capetown, p. 3, pl. 1, figg. 1–7, RAFFRAY, t. c.
Wroughtonilla n. g. *Myrmedoniini*, for *W. lobopeltæ*, n. sp., India, WASMANN, p. 157, pl. ii, f. 1, Deutsche ent. Zeitschr. 1899.
Xantholinus laniger, Algeria, FAUVEL, p. 97, Rev. Ent. franc. xviii; *X. wingelmulleri*, Siebenbürgen, BERNHAUER, p. 24, Verh. Ges. Wien 1899 : n. spp.
Xenidus Rey, characters, FAUVEL, p. 12, Rev. Ent. franc. xviii.
Xenodusa cava var. n. *major*, WASMANN, p. 410, Deutsche ent. Zeitschr. 1899.

PSELAPHIDÆ.

[*Cf.* FAIRMAIRE (357), FIORI (383, 384), KRAUSS (722), PEYERIMHOFF (902), RAFFRAY (951), REITTER (979), SAINTE-CLAIRE-DEVILLE (1011).]

Dimorphism of males of certain species of *Bythinus*, FIORI, pp. 97–100, pl. iv, Atti Soc. Modena, xxxii.

Pœcilandry, in *Bythinus* and *Trogaster*, PEYERIMHOFF (902).

Bryaxis fuchsii, Dalmatia, HUMMLER, p. 23, Illustr. Zeitschr. Ent. iv; *B. perrieri*, Madagascar, RAFFRAY, p. 516, Ann. Soc. ent. France 1899 : n. spp.

Bythinus latebrosus and *ravouxi* one species, variation of male characters; *B. argodi* and *latebrosus* distinguished, PEYERIMHOFF, pp. 229, 230, Bull. Soc. ent. France 1899.

B. cateniger, Austria, KRAUSS, p. 204, Wien. ent. Zeit. 1899; *B.* (*Machærites*) *gracilipes*, Nice, SAINTE-CLAIRE-DEVILLE, p. 63, Bull. Soc. ent. France 1899; *B.* (*M.*) *troglodytes*, p. 105, *cavernicola*, p. 107, Italy, FIORI, Atti Soc. Modena xxxii; *B. karamani*, Spalato, REITTER, p. 273, Deutsche ent. Zeitschr. 1899 : n. spp.

Centrophthalmus minor Fairm. referred to *Bryaxis*, p. 516; *C. angustior* Fairm. referred to *Sognorus*, p. 519, RAFFRAY, Ann. Soc. ent. France 1899.

C. muticus, Madagascar, RAFFRAY, p. 521, t. c. n. sp.

Chennium bituberculatum, note on supposed larva, PEYERIMHOFF, p. 287 Bull. Soc. ent. France 1899.

Claviger handmanni, Bosnia, WASMANN, p. 771, cut, Wiss. Mitt. Bosnien vi, n. sp. (but cf. Z. R. 1898).

Commatocerinus laevis, Madagascar, RAFFRAY, p. 522, Ann. Soc. ent. France 1899, n. sp.

Ctenistes perrieri, Madagascar, FAIRMAIRE, p. 315, Bull. Soc. ent. France 1899, n. sp.

Desimia gibbicollis, Madagascar, RAFFRAY, p. 519, Ann. Soc. ent. France 1899, n. sp.

Dimerus n. g. near *Euplectus*, p. 103, for *D. staphylinoides*, n. sp., Italy, p. 104, FIORI, Atti Soc. Modena xxxii.

Enoptostomus madagascariensis, Suberbieville, RAFFRAY, p. 520, Ann. Soc. ent. France 1899, n. sp.

Fusifer n. g. for *Commatoceropsis perrieri* Fairm., RAFFRAY, p. 524, Ann. Soc. ent. France 1899.

Hadrophorus Fairm., characters and position, RAFFRAY, p. 522, Ann. Soc. ent. France 1899.

Holozodini new tribe, between *Pselaphini* and *Ctenistini*, for *Holozodus* Fairm., RAFFRAY, p. 518, Ann. Soc. ent. France 1899.

Pasiglyptus n. n. for *Hologlyptus* Fairm. nec. Lacord., BERG, Comun. Mus. Buenos Aires i, p. 79.

Radamides sulcicollis, Madagascar, FAIRMAIRE, p. 316, Bull. Soc. ent. France 1899; *R. minutus*, Madagascar, RAFFRAY, p. 524, Ann. Soc. ent. France 1899 : n. spp.

Reichenbachia (*Brachygluta*) *nodiventris*, Turkestan, REITTER, p. 274, Deutsche ent. Zeitschr. 1899; *R. imerinae*, *mateola*, p. 517, *decursa*, p. 518, Madagascar, RAFFRAY, Ann. Soc. ent. France 1899 : n. spp.

Thysdrus gracilis, Madagascar, RAFFRAY, p. 523, Ann. Soc. ent. France 1999, n. sp.

Trymalius Fairm., characters and position, RAFFRAY, p. 524, t. c.

PAUSSIDÆ.

[*Cf.* ESCHERICH (346), FAIRMAIRE (357, 358, 359), FRANÇOIS (421), KRAATZ (706), WASMANN (1194).]

Cerapterus longipennis, Tanganyika, p. 34, *denoiti*, Uganda, p. 36, WASMANN, Notes Leyden Mus. xxi, n. spp.

Homopterus aequatoriensis, Ecuador, WASMANN, p. 33, pl. iii, fig. 1, t. c. n. sp.

Paussus favieri, relations with ants, bombarding structures, ESCHERICH (346).

P. inexspectatus, Madagascar, FAIRMAIRE, p. 131, Bull. Soc. ent. France 1899, and Ann. Soc. ent. Belgique 1899, p. 515; *P. armicollis*, Madagascar, FAIRMAIRE, p. 181, Bull. Soc. ent. France 1899; *P. planifrons*, Madagascar, FAIRMAIRE, p. 315, t. c.; *P. sesquisulcatus*, Guzerath, p. 37, pl. iii, fig. 2, *semilineatus*, p. 38, Port Elizabeth, *liber*, W. Africa, p. 39, pl. iii, fig. 4, *leroyi*, Zanzibar, p. 41, pl. iii, fig. 5, *pallidefulvus*, Franceville, p. 42, pl. iii, fig. 6, *quadricornis*, Burma, p. 43, pl. iv, fig. 8, *semirufus*, p. 45, fig. 9, *javanus*, p. 46, fig. 10, Java, *oberthuri*, p. 47, fig. 12, *perroti*, p. 49, fig. 14, Madagascar, WASMANN, Notes Leyden Mus. xxi : n. spp.

Pleuropterus flavolineatus, E. Africa, KRAATZ, p. 143, Deutsche ent. Zeitschr. 1899, n. sp.

SCYDMÆNIDÆ.

[*Cf.* PÉRINGUEY (889), PEYERIMHOFF (901), PIC (934), REITTER (976, 982).]

Cephennium sp.; the larva has been described as a new Order, under the name of *Anisosphaera problematica*, BERGROTH, p. 295, Bull. Soc. ent. France 1899; *C. laticolle*, larva, PEYERIMHOFF, pp. 170–174, cuts, t. c.

Euconnus puniceus, note and habitat, FIORI, p. 95, Atti Soc. Modena xxxii.

E. (*Tetramelus*) *gobanzi*, Dalmatia, REITTER, p. 287, Deutsche ent. Zeitschr. 1899; *E. gobanzi*, REITTER, p. 157, Wien. ent. Zeit. 1899 : n. sp.

Neuraphes viturati, Alpes-maritimes, PIC, p. 154, Bull. Soc. Autun xl, 2; *N. meledanus*, Dalmatia, REITTER, p. 287, Deutsche ent. Zeitschr. 1899 : n. spp.

Oneila n. g. for *O. heterocera*, p. 240, *enonensis*, p. 241, n. spp., Cape Colony, PÉRINGUEY, Ann. S. African Mus. i.

SILPHIDÆ, SPHÆRIIDÆ, and PLATYPSYLLIDÆ.

[*Cf.* BORDAS (130), FABRE (351), GANGLBAUER (458, 459), MATTHEWS (798), SAINTE-CLAIRE-DEVILLE (1012), WASMANN (1205), WEBER (1215).

Sphaerites to form a distinct family, GANGLBAUER, Käf. Mitteleur. iii, p. 415.

Sphaerius, monographed as forming a family *Sphaeriidae*, MATTHEWS (798).

Agathidium (*Chætoceble* subg. n.) *pilosum*, Alpes-maritimes, SAINTE-CLAIRE-DEVILLE, p. 292, Bull. Soc. ent. France 1899, n. sp.

Anisotoma, species of France, DECAUX, pp. 2 etc. Feuille Natural. xxx.

Bathyscia freyeri?, larva, WEBER, p. 1, pl. Illustr. Zeitschr. Ent. i.

Blitophaga opaca var. n. *samnitica*, FIORI, p. 161, Atti Soc. Modena xxxi.

Catops nigricans, larva, XAMBEU, p. 179, Naturaliste 1899.

Chaetoceble subg. n., cf. *Agathidium*.

Choleva spinipennis Reitt. ♂, SEMENOW, p. 114, Bull. Soc. Moscou 1899.

C. leucophthalma, Italy, FIORI, p. 160, Atti Soc. Modena xxxi, n. sp.

Liodes skalitzkyi, Tyrol, GANGLBAUER, p. 531, Verh. Ges. Wien 1899, n. sp.

Mehadiella n. n. for *Frivaldskya* Gangl. nec Schiner, CSIKI, p. 247, Termes. Fuzetek xxii.

Platypsyllus castoris, habits and metamorphosis, CHOBAUT, pp. 197–200, Naturaliste 1899.
Necrophorus, habits, FABRE (351, chaps. vii, viii).
Scotocryptus goeldii, Parà in nests of *Melipona*, WASMANN, p. 411, Deutsche ent. Zeitschr. 1899, n. sp.
Sphærius texanus, p. 213, *politus*, N. America, *hispanicus*, Spain, p. 214, MATTHEWS, Mon. Coryloph. n. spp.

SCAPHIDIIDÆ.

Baeocera devillei, Corsica, REITTER, p. 157, Wien. ent. Zeit. 1899, n. sp.
Scaphidium politum, Madagascar, FAIRMAIRE, p. 469, Ann. Soc. ent. France 1899, n. sp.

HISTERIDÆ.

[*Cf.* BEDEL (74), FUENTE (455), LEWIS (759), MÜLLER (857), THERY (1141).]

Apobletes solutus, Brazil, *mundus*, Usambara, p. 6, *almeidæ*, Madagascar, p. 7, LEWIS, Ann. Nat. Hist. iv, n. spp.
Campylorhabdus singularis, figure, LEWIS, p. 13, t. c.
Carcinops prasinus, Vera Cruz, LEWIS, p. 18, t. c. n. sp.
Epiechinus tasmani, Australia, LEWIS, p. 29, t. c. n. sp.
Hister lugubris var. n. *jadrensis*, MÜLLER, p. 150, Wien. ent. Zeit. 1899; *H. mtesa* Ancey, characters, p. 12, *H. striola* Sahlb. = (*succicola* Th. = *japanus* Motsch.) p. 17, LEWIS, Ann. Nat. Hist. iv.
H. saginatus, p. 13, *colonicus*, p. 14, E. Africa, *tinctus*, Santarem, p. 15, *striatipectus*, Chapada, p. 16, *crenatifrons* Sumatra, p. 17, *sessilis*, Burma, p. 18, LEWIS, Ann. Nat. Hist. iv : n. spp.
Hololepta mastersi and *sidnensis*, distinguished, LEWIS, p. 5, t. c.
Hypocaccus ainu, Yezo, p. 24, *rubicilliæ*, Usambara, p. 25, *rubricatus*, Natal, p. 26, LEWIS, t. c. n. spp.
Omalodes tuberosus, Brazil, LEWIS, p. 12, t. c. n. sp.
Pachycrærus pullus, *tenuistriatus*, distinguished, *P. brevipennis* Lew. referred to *Chalcurgus*, LEWIS, p. 11, t. c.
P. cæruleatus, Congo, LEWIS, p. 11, t. c. n. sp.
Paromalus niponensis, Japan, LEWIS, p. 21, t. c. n. sp.
Phelister nigropunctatus, N. S. Wales, LEWIS, p. 10, t. c. n. sp.
Phylloma angulare, Colombia, LEWIS, p. 4, t. c. n. sp.
Plaesius lævigatus referred to *Hololepta*, queried as *H. procera* Er., LEWIS, p. 5, t. c.
Platysoma satzumæ, Japan, p. 8, *latimarginatum*, *bipunctatum*, N. S. Wales, p. 9, LEWIS, t. c. n. spp.
Pygocœlis usambicus, figure, LEWIS, p. 28, t. c.
Saprinodes falcifer, figure, LEWIS, p. 24, t. c.
Saprinus, and allied genera, characters, LEWIS, pp. 1–3, cuts, t. c.; *S. detersus* var. n. *nisetei*, p. 152, *S. furvus* var. n. *interstitialis*, p. 153, *S. dimidiatus* var. n. *hummleri*, p. 154, MÜLLER, Wien. ent. Zeit. 1899.
S. calatravensis, Spain, FUENTE, Acta Soc. espan. 1899; *S. inversus*, Brazil, LEWIS, p. 23, Ann. Nat. Hist. iv : n. spp.
Satrapes peyerimhoffi, Basses-Alpes, BEDEL, p. 184, Bull. Soc. ent. France 1899, n. sp.
Stictotix: Limnichus frontalis Macl. referred to this and redescribed, LEWIS, p. 20, Ann. Nat. Hist. iv.
S. leæ, N. S. Wales, LEWIS, p. 19, t. c. n. sp.

Teretriosoma latirostre, Texas, LEWIS, p. 28, t. c. n. sp.
Tiretrius (sic) *fairmairei*, Madagascar, THERY, p. 211, Ann. Soc. ent. Belgique 1899, n. sp.
Tribalus tropicus and *doriæ* distinguished, LEWIS, p. 22, Ann. Nat. Hist. iv.
T. leæ, Australia, LEWIS, p. 21, t. c. n. sp.
Trypeticus meridianus, Lombok, LEWIS, p. 27, t. c. n. sp.

PHALACRIDÆ.

[*Cf.* BLACKBURN (106), REITTER (976, 977, 978).]

Litochrus strigosus, Transcaspian, REITTER, p. 199, Deutsche ent. Zeitschr. 1899, n. sp.
Olibrus bulgaricus, Bulgaria, REITTER, p. 158, Wien. ent. Zeit. 1899; *O. striatissimus*, Transcaucasus, REITTER, p. 282, pl. iv, fig. 2, Wien. ent. Zeit. 1899 : n. spp.
Parasemus mitchelli, Queensland, BLACKBURN, p. 24, Tr. R. Soc. S. Austral. xxiii, n. sp.

NITIDULIDÆ and MONOTOMIDÆ.

[*Cf.* GANGLBAUER (458), GROUVELLE (499–501), REITTER (978).]

Æthina major Reitt., *pubescens* Fairm., *limbalis* Brancs. are varr. of one species, *Æ. tumida* Murr. referred to *Æthinopa*, GROUVELLE, p. 150, Ann. Soc. ent. France 1899.
Æ. soror, S. Africa, GROUVELLE, p. 149, Ann. Soc. ent. France 1899, n. sp.
Æthinopa parallela, Gaboon, GROUVELLE, p. 131, t. c. n. sp.
Amphicrossus natalensis, Natal, GROUVELLE, p. 150, t. c. n. sp.
Brachypeplus depressus = (*agyzimbanus* Fairm.) and *B. caffer* = (*costalis* Fairm.), GROUVELLE, p. 136, Bull. Soc. ent. France 1899.
B. consobrinus, Congo, GROUVELLE, p. 136, Ann. Soc. ent. France 1899, n. sp.
Brachypterus immundus, East Siberia, REITTER, p. 199, Deutsche ent. Zeitschr. 1899, n. sp.
Carpophilus rufangulus, *analis*, p. 129, *tumidulus*, p. 130, Cameroons, GROUVELLE, Ann. Soc. ent. France 1899, n. spp.
Cillæopsis n. g. near *Orthogramma*, for *C. kraatzi*, *nitidula*, n. spp., Cameroons, GROUVELLE, p. 127, t. c.
Cillæus gabonensis referred to *Brachypeplus*, GROUVELLE, p. 136, t. c.
C. basalis, p. 125, *conradti*, *depressus*, p. 126, Cameroons, GROUVELLE, t. c. n. spp.
Cryptarcha notata, E. Africa, GROUVELLE, p. 300, Ann. Soc. ent. Belgique 1899; *C. martini*, Natal, GROUVELLE, p. 154, Ann. Soc. ent. France 1899 : n. spp.
Cryptarcula subg. n. for *Cryptarcha imperialis*, GANGLBAUER, p. 550, Käf. Mitteleur. iii.
Cyanostolus subg. n. for *Rhizophagus aeneus*, GANGLBAUER, p. 564, t. c.
Cyllodes basimaculatus, p. 132, *conradti*, *praeustus*, p. 133, *misellus*, *kraatzi*, p. 134, Cameroons, GROUVELLE, Ann. Soc. ent. France 1899, n. spp.
Epuræa conradti, Cameroons, GROUVELLE, p. 130, t. c.; *E. singularis*, Cape G. H., GROUVELLE, p. 136, t. c. : n. spp.
Europs amabilis, Cape G. H., GROUVELLE, p. 155, t. c. n. sp.
Lordites duplicatus ♀ = (*sinuatipennis* Fairm.), GROUVELLE, p. 142, t. c. 1899.
L. ferrugineus, Bagamoyo, p. 142, *quadrimaculatus*, Madagascar, *quadrinotus*, E. Africa, p. 143, GROUVELLE, t. c. n. spp.

Meligethes buduensis, p. 524, *subfumatus*, p. 532, Centr. Europe, GANGLBAUER, Käf. Mitteleur. iii; *M. similis*, Abyssinia, p. 148, *illustris*, Cape G. H., p. 149, GROUVELLE, Ann. Soc. ent. France 1899 : n. spp.

Micropria n. g. near *Pria*, for *M. kraatzi*, n. sp., Cameroons, GROUVELLE, p. 131, t. c.

Neothalycra n. g. near *Thalycra*, for *N. gigas*, p. 299, *hacquardi*, p. 300, n. spp., Usambara, GROUVELLE, Ann. Soc. ent. Belgique 1899.

Ornosia n. g. near *Soronia*, for *O. sexpunctata*, n. sp., Madagascar, GROUVELLE, Ann. Soc. ent. France 1899.

Pallodes alluaudi, Madagascar, p. 152, *emmerezi*, Mauritius, p. 153, GROUVELLE, t. c. n. spp.

Pityophagus lævior, var. n. *deubeli*, GANGLBAUER, p. 532, Verh. Ges. Wien 1899.

Platychora binotata, Somaliland, *australis*, Natal, GROUVELLE, Ann. Soc. ent. France 1899, n. spp.

Pocadiodes n. g. for *Pocadius wajdelota* Wank., GANGLBAUER, p. 543, Käf. Mitteleur. iii.

Pria decorata, Madagascar, p. 144, *concolor*, *ruficollis*, Cape G. H., p. 145, *antennata*, *squamosa*, p. 146, *martini*, p. 147, S. Africa, GROUVELLE, Ann. Soc. ent. France 1899, n. spp.

Pseudocamptodes sordidus, Madagascar, p. 151, *natalensis*, Natal, p. 152, GROUVELLE, t. c. n. spp.

Pycnomerus africanus, Natal, *fairmairei*, Madagascar, GROUVELLE, p. 156, t. c. n. spp.

Saprobia subg. n. of *Omosita*, for *O. discoidea*, *colon*, GANGLBAUER, p. 488, Käf. Mitteleur. iii.

Soronia borbonica, Réunion, p. 140, *distincta*, Cape G. H., p. 141, GROUVELLE, Ann. Soc. ent. France 1899, n. spp.

Stelidota clavicornis Fairm., referred to *Pria*, *P. affinis* Reitt. is the same species, GROUVELLE, p. 144, t. c.

S. costulata, Mauritius, GROUVELLE, p. 137, t. c. n. sp.

Thalycra striolata and *castanescens* Fairm. referred to *Æthinopa*, GROUVELLE, p. 150, t. c.

Tricanus major, Congo, GROUVELLE, p. 153, t. c. n. sp.

Xanthopeplus ipsoides, Cameroons, GROUVELLE, p. 125, t. c. n. sp.

TROGOSITIDÆ.

[*Cf.* GANGLBAUER (458), LEA (745), LÉVEILLÉ (758).]

Acrops punctata var. = (*dohrni* Reitt.), LÉVEILLÉ, p. 160, Bull. Soc. ent. France 1899.

A. cyanea, Perak, LÉVEILLÉ, p. 158, t. c. n. sp.

Ancyrona aurora, p. 158, *gabonica*, Congo, *fryi*, *obscura*, Sumatra etc., *grouvellei*, New Guinea, p. 159, LÉVEILLÉ, t. c.; *A. martini*, p. 226, *rufolineata*, *vicina*, *bivittata*, p. 227, LÉVEILLÉ, t. c. : n. spp.

Cylidrella mollis, habits, SCHWARZ, p. 187, P. ent. Soc. Washington iv.

Decamerus hæmorrhoidalis = (*Peltostoma unguicularis* Reitt.), LÉVEILLÉ, p. 160, Bull. Soc. ent. France 1899.

Diontolobus punctipennis = (*Micropeltis serraticollis* Redt. and *D. lateritius* Fairm.), LÉVEILLÉ, p. 160, t. c.

Phycosecis ammophilus, W. Australia, LEA, p. 546, P. Linn. Soc. N. S. Wales xxiii, n. sp.

Tenebroides mathani referred to *Airora*, LÉVEILLÉ, p. 160, Bull. Soc. ent. France 1899.

Xenoglena fryi, Perak, LÉVEILLÉ, p. 158, t. c. n. sp.

COLYDIIDÆ.

[*Cf.* ABEILLE (2), FAIRMAIRE (354, 356), GANGLBAUER (458), GROUVELLE (501), LEA (745), REITTER (985), SCHWARZ (1039), SHARP (475, 1065).]

Aplanetes n. g. near *Rhizonium*, for *A. fasciatus*, n. sp., Marquesas, SHARP, p. 9, Ent. Mag. 1899.

Bitoma discicollis, Marquesas, SHARP, p. 7, t. c. n. sp.

Bothrideres acuticosta, p. 470, *castanescens*, p. 471, Madagascar, FAIRMAIRE, Ann. Soc. ent. France 1899; *B. opacus*, p. 550, *intermedius*, *ustulatus*, p. 551, *aberrans*, p. 552, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii; *B. cactophagi*, Arizona, SCHWARZ, p. 10, Psyche viii, Supp. i : n. spp.

Cerylon episcopale, Madagascar, *mauritium*, Mauritius, p. 168, *marginatum*, *humerale*, p. 169, *madagascariense*, Madagascar, *dubium*, Natal, p. 170, GROUVELLE, Ann. Soc. ent. France 1899, n. spp.

Cicones insularis, Mauritius, GROUVELLE, p. 163, t. c. n. sp.

Coxelus martini, Natal, *insularis*, Mauritius, GROUVELLE, p. 161, t. c. n. spp.

Cossyphodes; tarsal structure corrected, WASMANN, p. 161, Deutsche ent. Zeitschr. 1899.

Cossyphodidæ, n. fam. for *Cossyphodes* and *Cossyphodinus*, q. v.

Cossyphodinus, n. g., p. 163, for *C. indicus*, n. sp., Ahmednagar, p. 164, pl. ii, fig. 3, WASMANN, Deutsche ent. Zeitschr. 1899.

Deretaphrus analis, p, 547, *xanthorrhœæ*, *parviceps*, p. 548, *puncticollis*, p. 549, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii, n. spp.

Diodesma denticincta, Alpes-maritimes, ABEILLE, p. 408, Bull. Soc. ent. France 1899, n. sp.

Discoloma humerale, Guatemala, pl. xv, fig. 24, *circulare*, Panama, SHARP, Biol. Centr. Amer. Col. ii, i, p. 497, n. spp.

Ditoma alluaudi, Mauritius, GROUVELLE, p. 164, Ann. Soc. ent. France 1899, n. sp.

Endeitoma fairmairei, Zanzibar, GROUVELLE, p. 164, t. c. n. sp.

Endophlœus peringueyi, p. 158, *minutissimus*, Cape G. H., *alluaudi*, Réunion, p. 159, *bouvieri*, Madagascar, p. 160, GROUVELLE, t. c. n. spp.

Holophygus n. g. near *Discoloma*, p. 497, for *H. celatus*, n. sp., Panama, pl. xv, fig. 25, p. 498, SHARP, Biol. Centr. Amer. Col. ii, i.

Keklasmenus n. g. near *Bitoma*, p. 8, for *K. serraticollis*, n. sp., Marquesas, p. 9, SHARP, Ent. Mag. 1899.

Labromimus similis, p. 165, *ignotus*, p. 166, *difficilis*, p. 167, Africa, GROUVELLE, Ann. Soc. ent. France 1899, n. sp.

Lado martini, Port Elizabeth, GROUVELLE, p. 162, t. c. n. sp.

Ocholissa capensis, S. Africa, GROUVELLE, p. 167, t. c. n. sp.

Ogmoderes subg. n. for *Bothrideres augusticollis* Bris., GANGLBAUER, p. 899, Käf. Mitteleur. iii.

Orthocerus raffrayi, Cape G. H., GROUVELLE, p. 155, Ann. Soc. ent. France 1899, n. sp.

Paganettia subg. n. for *Langelandia callosipennis*, GANGLBAUER, p. 883, Käf. Mitteleur. iii.

Penthelispa japonicus, Japan, REITTER, p. 216, Ent. Nachr. xxv; *P. polita*, *picea*, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii : n. spp.

Pycnomeroplesius subg. n. for *Pyc. inexspectus* Duv., GANGLBAUER, p. 886, Käf. Mitteleur. iii.

Pycnomerus insularis, Marquesas, *dubius*, Pitcairn island, SHARP, p. 10, Ent. Mag. 1899, n. spp.

Rechodes emarginatus, Cape G. H. and Madagascar, GROUVELLE, p. 157, Ann. Soc. ent. France 1899, n. sp.

Sosylus perrieri, Madagascar, FAIRMAIRE, p. 386, Bull. Soc. ent. France 1899, n. sp.

Stematosoma n. g. near *Aprostoma*, for *S. canaliculatum*, n. sp., Madagascar, FAIRMAIRE, p. 385, t. c. n. sp.

Tarphius alluaudi, Mauritius, GROUVELLE, p. 162, Ann. Soc. ent. France 1899, n. sp.

RHYSODIDÆ.

Clinidium guatemalenum, Cent. Amer., SHARP, p. 498, Biol. Centr.-Amer. Col. ii, i, n. sp.

CUCUJIDÆ.

[*Cf.* FAIRMAIRE (354), GANGLBAUER (458), GROUVELLE (501), SHARP (475).]

Ancistriinæ, subfam. n., SHARP, p. 541, Biol. Centr. Amer. Col. ii, i.

Catogenus integratus, *germanus*, pl. xvi, fig. 1, p. 501, *collaris*, fig. 2, *pusillus*, p. 502, *temacensis*, p. 503, *puncticollis*, fig. 3, p. 504, Centr. America, SHARP, t. c. n. spp.

Cathartus cassiæ and *gemellatus* one species, figured, pl. xvii, fig. 25, SHARP, t. c. p. 559.

C. annectens, Honduras, SHARP, l. c. n. sp.

Cryptamorpha lateralis, Madagascar, GROUVELLE, p. 179, Ann. Soc. ent. France 1899, n. sp.

Cryptolestes subg. n. for *Læmophlœus castaneus*, etc., GANGLBAUER, p. 612, Käf. Mitteleur. iii.

Deinophlœus n. g. for *D. ducalis*, pl. xvii, fig. 11, *ducalis*, n. spp., Centr. America, SHARP, p. 540, Biol. Centr. Amer. Col. ii, i.

Emporius n. g. for *Silvanus signatus*, GANGLBAUER, p. 586, Käf. Mitteleur. iii.

Euplatamus n. g. for *E. debilis*, pl. xvii, fig. 15, p. 549, *humeralis*, *longicornis*, fig. 16, p. 550, n. spp., Central America, SHARP, Biol. Centr.-Amer. Col. ii, i.

Inopeplus bifossulatus, pl. xvi, fig. 11, figured, SHARP, t. c.

I. darutyi, Mauritius, *puncticeps*, Zanzibar, GROUVELLE, Ann. Soc. ent. France 1899; *I. centralis*, p. 511, *jugularis*, pl. xvi, fig. 12, *concolor*, p. 512, Centr. Amer., SHARP, Biol. Centr.-Amer. Col. ii, i : n. spp.

Læmophlœus planulatus, generic characters, GROUVELLE, p. 179, Ann. Soc. ent. France 1899.

L. coquereli, Réunion, *cornutus*, Madagascar, p. 174, *peringueyi*, p. 175, *clarus*, *perspicuus*, S. Africa, p. 176, *janeti*, Congo, p. 177, *biskrensis*, Algeria, *tenebrosus*, Réunion, p. 178, GROUVELLE, Ann. Soc. ent. France 1899; *L. distinguendus*, pl. xvii, fig. 1, p. 513, *suturalis*, fig. 2, p. 514, *breviceps*, fig. 14, *championi*, p. 516, *hoplites*, *boops*, fig. 15, p. 517, *anticus*, *minutus*, fig. 16, *ignobilis*, p. 518, *puncticollis*, *endomychus*, p. 519, *clavicornis*, fig. 17, *immersus*, fig. 18, p. 520, *incisus*, *amulæ*, fig. 19, p. 521, *guatemalenus*, *optatus*, *flavescens*, p. 522, *celatus*, fig. 20, *annectens*, p. 523, *striatus*, *insolitus*, fig. 21, p. 524, *inustus*, *carabinus*, p. 525, *corporalis*, fig. 22, *frequens*, p. 526, *alticola*, *distans*, fig. 23, p. 527, *iteratus*, fig. 25, p. 528, *addendus*, fig. 24, p. 529, *pauper*, *dives*, pl. xvii, fig. 3, p. 530, SHARP, Biol. Centr.-Amer. Col. ii, i : n. spp.

Microbrontes, not valid as it is based merely on largely developed male characters, smaller males of the same species being placed in *Læmophlœus*, SHARP, p. 529, Biol. Centr.-Amer. Col. ii, pt. i.

Nausibius brevicornis, pl. xvii, fig. 22, *grouvellei*, *silvanoides*, fig. 23, Centr. America, SHARP, t. c. n. spp.

Oryzæphilus subg. n. for *Silvanus surinamensis* etc., GANGLBAUER, p. 584, Käf. Mitteleur. iii.

Palæstes variipes, p. 505, *nicaraguæ*, *abruptus*, pl. xvi, fig. 9, *nigridens*, p. 506, *scutellaris*, p. 507, Centr. America, SHARP, Biol. Centr.-Amer. Col. ii, i, n. spp.

Parandrita deceptor, *stipes*, pl. xvii, fig. 8, Centr. America, SHARP, t. c. n. spp.

Paraphlœus n. g. near *Narthecius*, p. 509, for *P. crassiceps*, pl. xvi, fig. 7, *longicollis*, fig. 8, p. 110, Centr. Amer., n. spp., SHARP, t. c.

Pediacus major, pl. xvi, fig. 10, p. 507, *similis*, *confertus*, *mexicanus*, p. 508, Centr. Amer., SHARP, t. c. n. spp.

Platamus grouvellei, p. 547, *difficilis*, *uniformis*, p. 548, *dispar*, pl. xvii, fig. 13, p. 549, Centr. America, SHARP, t. c. n. spp.

Psammœchus bipunctatus, var., ELLIMAN, p. 145, Ent. Mag. 1899.

Pseudino ustulata, Madagascar, FAIRMAIRE,, p. 470, Ann. Soc. ent. France 1899, n. sp.

Rhabdophlœus n. g. near *Læmophlœus*, for *R. concolor*, p. 531, *dispar*, *chiriquensis*, pl. xvii, fig. 4, p. 532, n. spp., Centr. America, and *L. costatus* Grouv., SHARP, Biol. Centr.-Amer. Col. ii, pt. 1.

Rhinomalus signatus, pl. xvii, fig. 6, *anthracinus*, fig. 7, *chiriquensis*, p. 535, Centr. Amer., SHARP, t. c. n. spp.

Rhinophlœus n. g. for part of *Rhinomalus*, p. 532, and *R. gracilis*, p. 533, *nasutus*, p. 534, pl. xvii, fig. 5, n. spp., Centr. Amer., SHARP, t. c.

Shoguna; characters, SHARP, p. 545, t. c.

Silvanophlœus n. g., p. 537, type *Læmophlœus testaceus*, and including *S. infimus*, pl. xvii, fig. 9, *atomarius*, p. 538, *fraudator*, fig. 10, *cognatus*, *bembidium*, p. 539, n. spp., Centr. Amer., SHARP, t. c.

Silvanus surinamensis, metamorphosis, JABLONOWSKI, pp. 126–130, cuts, Termes. Kosl. 1899.

S. insignis, Madagascar, GROUVELLE, p. 180, Ann. Soc. ent. France 1899; *S. muticus*, *guatemalenus*, Guatemala, SHARP, p. 560, Biol. Centr.-Amer. Col. ii, i : n. spp.

Synobius n. g. *Silvaninæ*, for *S. lobicollis*, n. sp., Panama, pl. xvii, fig. 24, SHARP, p. 558, t. c.

Syssitos n. g. *Ancistriinæ*, p. 541, for *S. rostratus*, pl. xvi, fig. 5, *longiceps*, p. 542, *addendus*, p. 543, n. spp., Centr. Amer., SHARP, t. c.

Telephanus alluaudi, Mauritius, GROUVELLE, p. 172, Ann. Soc. ent. France 1899; *T. simplicicollis*, pl. xvii, fig. 17, p. 551, *centralis*, *mexicanus*, p. 552, *nigricollis*, *gracilis*, p. 553, *gracilicornis*, fig. 18, *dromioides*, fig. 19, p. 554, *brontoides*, fig. 20, *setulosus*, fig. 21, p. 555, *sellatus*, p. 556, Central America, SHARP, Biol. Centr.-Amer. Col. ii, i : n. spp.

Thione n. g. allied to *Prostominæ* and *Rhizophaginæ*, p. 544, for *T. cephalotes*, *puncticeps*, p. 545, *championi*, pl. xvi, fig. 6, p. 546, n. spp., Centr. Amer., SHARP, t. c.

CRYPTOPHAGIDÆ.

[*Cf.* GANGLBAUER (458), GROUVELLE (501), SCHWARZ (1039).]

Atomaria clavigera n. n. for *atra* Reitt., GANGLBAUER, p. 726, Käf. Mitteleur. iii.

A. acutifrons, p. 715, *soror*, p. 718, *straussi*, p. 721, Centr. Europe, GANGLBAUER, t. c. n. spp.

Cryptophagus (*Micrambe*) *proprius*, Cape G. H., GROUVELLE, p. 180, Ann. Soc. ent. France 1899, n. sp.

Ephistemus cactophilus, Arizona, SCHWARZ, p. 9, Psyche viii, Supp. i, n. sp.

Ootypus n. g. for *Ephistemus globosus*, GANGLBAUER, p. 737, Käf. Mitteleur. iii.

LATHRIDIIDÆ.

[*Cf.* BELON (76, 77), FALL (363), GANGLBAUER (458), WASMANN (1195).]

Revision of the N. American, FALL (363).
The *Lathridiidae* of South and Central America, BELON (76).
Adistemia n. g. for *Cart. watsoni* Woll., FALL, p. 141, Tr. Amer. ent. Soc. xxvi.
Belonia n. g. for *Cartodere unicostata* Bel., FALL, p. 142, t. c.
Cartodere quadrifoveolata, California, FALL, p. 136, t. c. n. sp.
Coluocera beloni, India, WASMANN, p. 160, Deutsche ent. Zeitschr. 1899, n. sp.
Corticaria robusta n. n. for *denticulata* Reitt., GANGLBAUER, p. 801, Käf. Mitteleur. iii.
C. pietschi, Herkulesbad, GANGLBAUER, p. 806, t. c.; *C. rudis*, p. 150, *varicolor*, p. 151, *parallela*, p. 152, *valida*, *inopia*, p. 153, *planula*, p. 154, *columbia*, p. 155, *poculifera*, p. 157, *carolina*, p. 158, *cribricollis*, *amplicollis*, p. 159, *incerta*, *apicalis*, p. 161, *occidua*, p. 162, *tenuipes*, p. 163, *temporalis*, *brevicornis*, p. 164, N. America, FALL, Tr. Amer. ent. Soc. xxvi : n. spp.
Cortilena Motsch. to be a subgen. of *Melanophthalma*, FALL, p. 167, Tr. Amer. ent. Soc. xxvi.
Dasycerus, a tribe, FALL, p. 110, t. c.
Enicmus suspectus, *desertus*, p. 125, *nigritus*, p. 126, *laeviventris*, *strenuus*, p. 128, *crassipunctatus*, p. 130, *fictus*, *mimus*, p. 131, *vanus*, *mendax*, p. 132, *ventralis*, p. 133, *sulcatulus*, p. 134, N. America, FALL, t. c. n. spp.
Fuchsina n. g. near *Melanophthalma*, for *F. occulta*, n. sp., California, FALL, p. 183, t. c.
Holoparamecus floridanus, N. America, FALL, p. 109, t. c. n. sp.
Lathridius breviclavus, p. 117, *armatulus*, *montanus*, p. 118, N. America, FALL, t. c. n. spp.
Melanophthalma chamæropis, p. 171, *casta*, p. 172, *insularis*, p. 174, *floridana*, *aculifera*, p. 175, *incompta*, p. 177, *terricula*, p. 178, *alberta*, p. 179, N. America, FALL, t. c. : n. spp.
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Revelieria californica, Los Gatos, FALL, p. 144, Tr. Amer. ent. Soc. xxvi, n. sp.

MYCETOPHAGIDÆ, THORICTIDÆ.

Philomyces subg. n. for *Mycetophagus populi*, GANGLBAUER, p. 832, Käf. Mitteleur. iii.
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[*Cf.* PIC (911, 912, 933), REITTER (977, 979, 985).]

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A. bleusei, Algeria, PIC, p. 85, Bull. Soc. ent. France 1899; *A. miniatulus*, p. 216, *pubifer*, p. 217, Akbès, REITTER, Ent. Nachr. xxv : n. spp.

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[*Cf.* FAIRMAIRE (352), GROUVELLE (501), REITTER (977).]

Dryops australis, *capensis*, S. Africa, p. 182, *angustus*, Sierra Leone, p. 183, GROUVELLE, Ann. Soc. ent. France 1899, n. spp.
Helmis ochraceipennis, p. 183, *binervosa*, *H.* (*Pachyelmis*) *fairmairei*, p. 184, Madagascar, *H. mixta*, Cape G. H., p. 185, GROUVELLE, t. c. n. spp.
Ludyella n. g. *Elmidarum*, p. 283, for *L. corticariiformis*, n. sp., S. Europe, p. 284, pl. iv, fig. 5, REITTER, Wien. ent. Zeit. 1899.
Rapnus n. g. for *R. raffrayi*, n. sp., Cape G. H., GROUVELLE, p. 181, Ann. Soc. ent. France 1899, n. sp.
Parnus grouvellii, Madagascar, FAIRMAIRE, p. 517, Ann. Soc. ent. Belgique 1899, n. sp.

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[*Cf.* BOILEAU (111–116), PLANET (935–937), WICKHAM (1231).]

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Ægus cornutus, S. China, p. 319, *taurus*, Tonkin, *ritsemae*, p. 320, *westwoodi*, Malay Pen., *nitidus*, Borneo, p. 321, BOILEAU, Bull. Soc. ent. France 1899, n. spp.
Agnus egenus = (*Bobus picornoti* Boil.), BOILEAU, p. 178, t. c.
Bobus n. g. near *Scortizus*, p. 39, for *B. picornoti*, n. sp., hab. ?, p. 40, BOILEAU, t. c.
Cantharolethrus inflexus, Costa Rica, BOILEAU, p. 297, t. c. n. sp.
Cardanus sericeus, Sumatra, BOILEAU, p. 43, t. c. n. sp.
Dorcus hyperion, Burma, BOILEAU, p. 177, t. c. n. sp.
Eurytrachelus elegans, Liou-Kiou islds., BOILEAU, p. 177, t. c. n. sp.
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Metadorcus rotundatus, ♀, BOILEAU, p. 298, Bull. Soc. ent. France 1899.
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M. dubernardi, Tibet, PLANET, p. 35, cut, t. c. n. sp.
Neolucanus leuthneri, Tonkin, p. 175, *opacus*, Kiu-Kiang, p. 176, BOILEAU, Bull. Soc. ent. France 1899; *N. waterhousei* for supposed one sex of *N. marginatus* Waterh., BOILEAU, p. 178, t. c.; *N. brevis*, Burma, BOILEAU, p. 197, t. c. : n. spp.
Odontolabis ritsemæ, Malacca, BOILEAU, p. 42, t. c. n. sp.
Pholidotus lindei, Brazil, BOILEAU, p. 296, t. c. n. sp.
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Sphenognathus garleppi, Bolivia, BOILEAU, p. 196, t. c. n. sp.

SCARABÆIDÆ.

[The following memoirs relate to *Scarabæidae*, viz.:—APFELBECK (27), ARROW (29–32), BLACKBURN (106), BORDAS (130), BOUCOMONT (138), BRENSKE (149–152), CHOBAUT (212), FABRE (351), FAIRMAIRE (352, 354, 402), FRANÇOIS (422), VON HEYDEN (534), JUDULIEN (613), KOLBE (672, 673), KRAATZ (695, 703, 704, 708), OHAUS (873, 874), REITTER (972, 978), WASMANN (1195); also *Cetoniini*, p. 121.]

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Glaphyrini.

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List of the *Melolonthini* in the Indian Mus. collection, BARLOW, pp. 234–272, Indian Mus. Notes iv.
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Antartioschiza gracilipes, Congo, BRENSKE, p. 380, Stettin. ent. Zeit. lix, n. sp.
Apogonia subgg. n. cf. *Catagonia, Metagonia.*
A. bomuana, uelleana, Africa, BRENSKE, p. 383, Ann. Soc. ent. Belgique 1899; *A.* (*Ceratogonia*) *kolbei*, Transvaal, KRAATZ, p. 141, Deutsche ent. Zeitschr. 1899; *A. conradti* with var. *capillata*, p. 42, *bicornuta*, p. 45, *sulcata*, p. 46, *fatidica*, p. 47, *acutangularis*, p. 48, *amitina*, p. 50, *kilimana*, p. 51, *abyssinica, nigrochalcea*, p. 52, *contracta*, p. 53, *subseriata*, p. 55, *tridentata*, p. 56, *platypyge*, p. 57, *platypus*, p. 58, Africa, KOLBE, Ent. Nachr. xxv; *A. soluta*, p. 199, *liberata*, p. 200, *intacta*, p. 201, *nietneri*, p. 202, Ceylon, KOLBE, Ent. Nachr. xxv: n. spp.
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Brahmina shillongensis, India, BRENSKE, p. 177, Ind. Mus. Notes iv, n. sp.
Brachylepis bennigseni, Africa, BRENSKE, p. 387, Stettin. ent. Zeit. lix, n. sp.
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Cephaloncheres n. g. *Macrophyllides*, for *C. ugogoensis*, n. sp., Africa, BRENSKE, p. 393, Stettin. ent. Zeit. lix.
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Comaserica n. g., p. 263, with the following n. spp. from Madagascar, *dapsilis*, p. 266, *decens*, p. 267, *simillima*, p. 270, *bouvieri*, p. 272, BRENSKE, Berlin. ent. Zeitschr. xliv.
Cyrtocamenta flavescens var., BRENSKE, p. 345, Stettin. ent. Zeit. lix.
Dissotoxus n. g. near *Homaloplia*, p. 477, for *D. insignicornis*, n. sp. Madagascar, p. 478, FAIRMAIRE, Ann. Soc. ent. France 1899.

Empecamenta usambarae, p. 338, *angustata*, p. 339, *bennigseni*, *parvula*, p. 340, E. Africa, BRENSKE, Stettin. ent. Zeit. lix, n. spp.

Empecta semicribrosa, Madagascar, FAIRMAIRE, p. 523, Ann. Soc. ent. Belgique 1899; *E. pruinosa*, Madagascar, FAIRMAIRE, p. 16, Mem. Soc. zool. France xii : n. spp.

Enaria crassa, Madagascar, FAIRMAIRE, p. 523, Ann. Soc. ent. Belgique 1899; *E. laeviscutata*, *asperula*, p. 479, *farafanganae*, *pinguis*, p. 480, *limbalis*, *granulosa*, p. 481, Madagascar, FAIRMAIRE, Ann. Soc. ent. France 1899 : n. spp.

Etischiza n. g. *Schizonychides*, for *S. heudelottii* Bl., BRENSKE, p. 379, Stettin. ent. Zeit. lix.

Eulaiades n. g. near *Pachycnema*, p. 12, for *E. inflatipes*, n. sp., Madagascar, p. 13, FAIRMAIRE, Mem. Soc. zool. France xii.

Euryschiza n. g. *Schizonychides*, p. 379, for *E. salaama*, n. sp., p. 380, E. Africa, BRENSKE, Stettin. ent. Zeit. lix.

Glyptoglossa burmeisteri, Cape G. H., BRENSKE, p. 382, t. c. n. sp.

Holotrichia alcocki, p. 177, *imitatrix*, *scrobipennis*, *problematica*, *andamana*, p. 178, E. India, *singhalensis*, Ceylon, p. 179, BRENSKE, Ind. Mus. Notes iv, n. spp.

Hoplebœa n. g. *Hopliides*, for *H. colmanti* n. sp., Africa, BRENSKE, p. 378, Ann. Soc. ent. Belgique 1899.

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Hybocamenta n. g. near *Camenta*, p. 341, for *H. benitoana*, p. 342, *gabonensis*, p. 343, *congoana*, p. 344, W. Africa, *maritima*, E. Africa, p. 345, n. spp., BRENSKE, Stettin. ent. Zeit. 1899.

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Lachnosterna arcuata, natural history, CHITTENDEN, pp. 74–80, figg. 16–18, Bull. U. S. Dep. Agric. ent. No. 19.

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Lasioserica insularis, Borneo, BRENSKE, p. 204, Berlin. ent. Zeitschr. xliv, n. sp.

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Metagonia subg. n. of *Apogonia*, for *A. platypyge* etc., KOLBE, p. 42, Ent. Nachr. xxv.

Microcamenta n. g. near *Camenta*, for *M. transvaalensis*, n. sp., Africa, BRENSKE, p. 346, Stettin. ent. Zeit. lix.

Microplus iners, Madagascar, FAIRMAIRE, p. 13, Mem. Soc. zool. France xii, n. sp.

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Monochelus (*Ischnochelus*) *dorri*, Madagascar, FAIRMAIRE, p. 12, Mem. Soc. zool. France xii, n. sp.

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Pachydema sinaitica, Sinai, HEYDEN, p. 253, Deutsche ent. Zeitschr. 1899, n. sp.

Pegylis bennigseni, p. 382, *usambarae*, p. 383, *hauseri*, *salaama*, p. 385, Africa, BRENSKE, Stettin. ent. Zeit. lix, n. spp.

Phyllotocus macleayi, habits, FROGATT, p. 873, Agric. Gaz. N. S. Wales x.

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Polyphylla hirtifrons, Mongolia, REITTER, p. 202, Deutsche ent. Zeitschr. 1899, n. sp.

Pseudotrochalus bomuanus, *colmanti*, Africa, BRENSKE, p. 382, Ann. Soc. ent. Belgique 1899, n. spp.

Scaphorhina colmanti, Africa, BRENSKE, p. 387, t. c. n. sp.

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S. rhizotrogoides, Abyssinia, BRENSKE, p. 177, Ind. Mus. Notes iv; *S. interna*, p. 383, *punctatissima*, p. 384, *circularis*, *colmanti*, p. 385, *uelleana*, *gibbitarsa*, *bomuana*, p. 386, *simillima*, p. 387, Africa, BRENSKE, Ann. Soc. ent. Belgique 1899; *S. hecistopsiloides*, p. 350, *congoana*, p. 352, *rugosa*, *valvata*, p. 353, *eremita*, *aspera*, p. 354, *hermanni*, *crinita*, p. 356, *flavescens*, p. 357, *kakomae*, *geilenkeuseri*, p. 358, *salaama*, *dilucida*, p. 359, *ovalula*, p. 360, *flavicornis*, p. 361, *usambarae*, p. 362, *bogamoyana*, *angolana*, *meinhardti*, p. 363, *togoana*, *stigmatica*, p. 364, *lindiana*, *rurigena*, p. 366, *villosa*, p. 367, *gracilis*, p. 368, *hahoensis*, p. 369, *grossa*, p. 370, *errabunda*, p. 371, *exclusa*, *exigua*, p. 372, *aschantica*, *amoena*, p. 373, *usaramae*, *abdicta*, p. 374, *dakarana*, p. 375, *microps*, p. 376, *liliputana*, *fimbriata*, p. 377, Africa, BRENSKE, Stettin. ent. Zeit. lix : n. spp.

Serica pallipes, Madagascar, FAIRMAIRE, p. 477, Ann. Soc. ent. France 1899; *S. clypealis*, Madagascar, FAIRMAIRE, p. 14, Mem. Soc. zool. France xii; *S.* (*Autoserica*) *calcuttae*, *nagana*, *S. assamensis*, India, BRENSKE, p. 176, Ind. Mus. Notes iv : n. spp.

Somatoserica n. g., p. 261, for *S. sikorae*, n. sp., Madagascar, p. 262, BRENSKE, Berlin. ent. Zeitschr. xliv.

Sphecoserica n. g., for *S. gracilipennis*, n. sp., Madagascar, BRENSKE, p. 263, t. c.

Synacta n. g. near *Serica*, p. 14, for *S. corrugata*, n. sp., Madagascar, p. 15, FAIRMAIRE, Mem. Soc. zool. France xii.

Syngeneschiza n. g. near *Schizonycha*, for *S. tarsata*, n. sp., E. Africa, BRENSKE, Stettin. ent. Zeit. lix.

Teraserica n. g. for *T. timorana*, n. sp., Timor, BRENSKE, p. 229, Berlin. ent. Zeitschr. xliv.

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Rutelini.

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Fornax cuneatus, p. 25, *minutus*, p. 26, Madagascar, FLEUTIAUX, t. c.; *F. rufiventris*, Sumatra, p. 226, *birmanicus*, Ruby mines, p. 227, *assamensis*, Assam, *dubius*, Engano, p. 229, *enganensis*, p. 230, *dohertyi*, p. 231, Sumatra, *borneensis*, S.E. Borneo, p. 232, FLEUTIAUX, Ann. Soc. ent. Belgique 1899; *F. castaneus*, *gounellei*, p. 46, *subnitidus*, p. 47, Brazil, FLEUTIAUX, Ann. Soc. ent. France 1899; *F. rugosus*, Brazil, p. 25, *leseleuci*, Bourbon, *bengalensis*, Chota Nagpore, p. 26, *antennalis*, Sumatra, p. 27, *nigripennis*, Brazil, p. 28, FLEUTIAUX, Ann. Soc. ent. Belgique 1899 : n. spp.

Hypocœlus mocquerysi, Madagascar, FLEUTIAUX, p. 26, Bull. Mus. Paris 1899, n. sp.

Idiotarsus gounellei, Brazil, FLEUTIAUX, p. 44, Ann. Soc. ent. France 1899, n. sp.

I. reedi, Chili, FLEUTIAUX, p. 221, Ann. Soc. ent. Belgique 1899, n. sp.

Mesogenus africanus, Congo, FLEUTIAUX, p. 30, t. c. n. sp.

Microrhagus perakensis, Perak, *fulvus*, Assam, p. 238, *gigas*, Perak, p. 239, *dohertyi*, Assam, p. 240, FLEUTIAUX, t. c.; *M. bifoveolatus*, Brazil, p. 29, *antennalis*, Bolivia, p. 30, FLEUTIAUX, t. c. : n. spp.

Otho dohertyi, Perak, FLEUTIAUX, p. 245, t. c. n. sp.

Plesiofornax reedi, Bahia, FLEUTIAUX, p. 233, t. c. n. sp.

Profornax crassus, Madagascar, FLEUTIAUX, p. 24, Bull. Mus. Paris 1899, n. sp.

Scython parvulus, Tenasserim, FLEUTIAUX, p. 234, Ann. Soc. ent. Belgique 1899, n. sp.

Tharops banghaasi, Japan, REITTER, p. 217, Ent. Nachr. xxv, n. sp.

Xylobius othoïdes, Rio Janeiro, FLEUTIAUX, p. 244, Ann. Soc. ent. Belgique 1899, n. sp.

ELATERIDÆ.

[*Cf.* BUYSSON (179–181), FIORI (381), FLEUTIAUX (395–397), HOLMGREN (547), PIC (925), RAGUÉS (953), REITTER (978), SCHWARZ (1040–1042).]

The copulatory pouch: its bearing on classification of the family, HOLMGREN (547).

Candèze's collection purchased by the Belgian government, Ann. Soc. ent. Belgique 1899, p. 311.

Agriotes corsicus, note on, FIORI, p. 163, Atti Soc. Modena xxxi; *A. gurgistanus*=(*monachus* Muls.), *turcicus*=(*corsicus* Fiori), BUYSSON, p. 211, Bull. Soc. ent. France 1899.

A. nadari, Turkestan, BUYSSON, p. 21, t. c. n. sp.

Agrypnus semistriatus, p. 74, *crassiventris*, p. 75, E. Africa, SCHWARZ, Deutsche ent. Zeitschr. 1899, n. spp.

Alaus kolbei, Usambara, SCHWARZ, p. 73, t. c.; *A. angustus*, E. Africa, SCHWARZ, p. 77, t. c. : n. spp.

Athous vittatus var. *niger*, FIORI, p. 162, Atti Soc. Modena xxxi.

A. rosinæ, Talysch Mts., REITTER, p. 203, Deutsche ent. Zeitschr. 1899, n. sp.

Campylopsephus n. g. for part of *Psephus*, with *C. nigromarginatus*, p. 68, *hæmorrhoidalis*, p. 69, Usambara, *laticollis*, *modestus*, p. 70, *impressicollis*, p. 71, *dimidiatus*, Cameroons, *rugosus*, E. Africa, p. 72, n. spp., SCHWARZ, Deutsche ent. Zeitschr. 1899.

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C. chobauti, Touggourt, BUYSSON, p. 213, t. c.. ; *C. akbesianus*, Syria, PIC, p. 139, Miscell. ent. vii; *C. mocquerysi, corallinus*, Madagascar, FLEUTIAUX, p. 224, Bull. Mus. Paris 1899 : n. spp.

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Harminius=(*Pseudocorymbites* Fiori), BUYSSON, p. 212, Bull. Soc. ent. France 1899.

Hemirhaphes madagascariensis, Madagascar, FLEUTIAUX, p. 223, Bull. Mus. Paris 1899, n. sp.

Lacon pictilis, E. Africa, SCHWARZ, p. 76, Deutsche ent. Zeitschr. 1899, n. sp.

Meristhus mocquerysi, Madagascar, FLEUTIAUX, p. 223, Bull. Mus. Paris 1899, n. sp.

Pantolamprus purpureus, E. Africa, SCHWARZ, p. 78, Deutsche ent. Zeitschr. 1899, n. sp.

Perrinellus n. g., for *Athous argentatus, Cardiophorus bousaadensis* etc., BUYSSON, p. 282, Bull. Soc. ent. France 1899.

Pristilophus mocquerysi, Madagascar, FLEUTIAUX, p. 225, Bull. Mus. Paris 1899, n. sp.

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Protelater=(*Anaspasis* Cand.), *P. parallelus*=(*fasciolatus* Cand.), FLEUTIAUX, p. 162, Bull. Soc. zool. France 1899.

P. solieri, Chili, id. l. c. n. sp.

Psephus discolor, E. Africa, SCHWARZ, p. 79, Deutsche ent. Zeitschr. 1899, n. sp.

Pseudocorymbites subg. n. of *Athous*, for *A. castaneus* Fairm., FIORI, p. 162, Atti Soc. Modena xxxi.

Teslasena lucasi, Jatahy, FLEUTIAUX, p. 206, Bull. Soc. ent. France 1899, n. sp.

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Cebriognathus n. g. for *C. desertorum*, n. sp., Algeria, CHOBAUT, p. 22, Bull. Soc. ent. France 1899.

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[*Cf.* ABEILLE (1), ALLUAUD (13), BOURGEOIS (139–142, 402), FAIRMAIRE (352, 354), FIORI (384), LEA (745), OLIVIER (875, 876), PIC (909, 915, 919, 929, 930, 933), REITTER (979), SCHILSKY (1022).]

Description and fig. of some large, remarkable larvæ considered to be *Lycides*, BOURGEOIS, Bull. Soc. ent. France 1899, p. 58.

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List of types of *Lampyridæ* in the Paris Museum, OLIVIER, pp. 73–75, Bull. Mus. Paris 1899.

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Anthocomus humerosus, p. 194, *costipennis*, p. 195, Madagascar, ABEILLE, Bull. Soc. ent. France 1899, n. spp.

Attalus obscurithorax, Algeria, PIC, p. 153, Misc. ent. vi, n. sp.

Calochromus amabilis, p. 560, *brevicornis*, p. 561, *pilosicornis*, p. 562, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii, n. spp.

Calopteron dissimile, p. 90, *parens*, p. 91, *simoni*, p. 93, *humile*, p. 94, *sallei*, p. 95, Venezuela, BOURGEOIS, Ann. Soc. ent. France 1899, n. spp.

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Cladodes carinatus, hab. ?, p. 89, *repertus*, *pauper*, *imperfectus*, Brazil, p. 90, OLIVIER, Bull. Soc. ent. France 1899, n. spp.

Collops bipunctatus a destroyer of *Doryphora*, MEAD, pp. 927–929, Entomologist 1899.

Danacœa mecheriensis, Algeria, p. 117, *sahlbergi*, p. 118, Centr. Asia, PIC, Bull. Soc. Autun xi, 2, n. spp.

Dasytes moreli, Pyrenees, SCHILSKY, Kaf. Eur. xxxvi, 1; *D.* (*Metadasytes*) *jurjurensis*, Algeria, PIC, p. 119, Bull. Soc. Autun xi 2 : n. spp.

Dasytiscus ragusæ, Sicily, SCHILSKY, Kaf. Eur. xxxvi 2; *D. semipallidus*, Armenia, REITTER, p. 275, Deutsche ent. Zeitschr. 1899 : n. spp.

Dryptelytra plorans, *inops*, Venezuela, *grandjeani*, Bolivia, OLIVIER, p. 91, Bull. Soc. ent. France 1899, n. spp.

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Hyas ingeniosa, Bolivia, OLIVIER, p. 89, Bull. Soc. ent. France 1899, n. sp.

Hypattalus brevicornis, *occidentalis*, p. 573, *longicornis*, p. 574, *collaris*, *dispar*, p. 575, *viridis*, *violaceus*, p. 576, *pulcherrimus*, p. 577, *mirabilis*, p. 578, *alphabeticus*, p. 579, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii, n. spp.

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Lamprocera dolens, *læta*, Brazil, OLIVIER, p. 87, Bull. Soc. ent. France 1899, n. spp.

Lucidota ingloria, Brazil, OLIVIER, p. 92, t. c. n. sp.

Lucio discolor, Amazons, OLIVIER, p. 88, t. c. n. sp.

Luciola scutellata, p. 530, *semiventralis*, *cinctiventris*, p. 531, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique 1899; *L. imerinæ*, Madagascar, BOURGEOIS, p. 9, Mem. Soc. zool. France xii; *L. gaiffei*, Madagascar, ALLUAUD, p. 382, Bull. Soc. ent. France 1899 : n. spp.

Lychnuris flavilabris, *demissa*, *adjuncta*, Cuba, *postica*, St. Domingo, p. 90, *militaris*, *bellicosa*, Cuba, p. 91, OLIVIER, Bull. Soc. zool. France 1899, n. spp.

Malthinus; note on the ♂ terminal segments; *M. raphidiceps*=(*obscuricollis* Fairm.), *M. merkli* var. n. *prætextus*, BOURGEOIS, pp. 368–370, Bull. Soc. ent. France 1899.

M. maritimus, France, PIC, p. 19, Echange xv; *M. delicatulus*, Broussa, BOURGEOIS, p. 370, Bull. Soc. ent. France 1899; *M. obscuripennis* p. 153, *tortiscelis*, p. 154, Algeria, PIC, Miscell. ent. vi; *M.* (? *Progeutes*) *olcesei*, p. 119, *M. angusticollis*, p. 120, N. Africa, PIC, Bull. Soc. Autun xi 2; *M. ægyptiacus*, Egypt, *longithorax*, p. 374, *crassipes*, *theresæ*, p. 375, *simplicipes*, *excisipes*, p. 376, Syria, PIC, Ann. Soc. ent. Belgique 1899 : n. spp.

Metriorrhynchus, extent and synonymy, LEA, p. 556, P. Linn. Soc. N. S. Wales xxiii.

M. marginipennis, p. 556, *cœnosus*, p. 557, *capucinus*, p. 558, Australia, LEA, t. c. : n. spp.

Microjulistus wegeneri, Egypt, p. 170, *sysholmi*, Syria, p. 171, PIC, Feuille Natural. xxix, n. spp.

Neocarphurus n. g. for *N. chlorops* n. sp., Australia, and *Carphurus impunctatus* etc. Lea, LEA, p. 580, P. Linn. Soc. N. S. Wales xxiii.

Pelania imperfecta, Algeria, OLIVIER, p. 92, Bull. Soc. ent. France 1899, n. sp.

Photinus maritimus, Jamaica, *apoplecticus*, *pygmæus*, Cuba, OLIVIER, p. 92, Bull. Soc. zool. France 1899, n. spp.

Plateros simoni, p. 98, *inæqualis*, *emplectoides*, p. 99, Venezuela, BOURGEOIS, Ann. Soc. ent. France 1899, n. spp.

Podistrina chobauti, p. 338, *continua*, p. 340, Mont Ventoux, BOURGEOIS,

Bull. Soc. ent. France 1899; *P.* (*Podistrella*) *malchinoides*, Asia Minor, PIC, p. 357, t. c. : n. spp.

Pyractomena galeata, Antilles, OLIVIER, p. 91, Bull. Soc. zool. France 1899, n. sp.

Rhagonycha nigrosuta, Italy, FIORI, p. 108, Atti Soc. Modena xxxii, n. sp.

Silis armicollis, Madagascar, FAIRMAIRE, p. 482, Ann. Soc. ent. France 1899, n. sp.

Tenaspis sinuosa, Cayenne, OLIVIER, p. 89, Bull. Soc. ent. France 1899, n. sp.

CLERIDÆ.

[*Cf.* BEDEL (73), BLACKBURN (106), FAIRMAIRE (352), GEBIEN (462), KRAATZ (689, 693), PÉRINGUEY (889), REITTER (979), SCHENKLING (1020, 1021).]

Aphelochroa fulva, W. Africa, KRAATZ, p. 86, Deutsche ent. Zeitschr. 1899, n. sp.

Callimerus bellus var. n. *sumatranus*, KRAATZ, p. 213, Ann. Soc. ent. Belgique 1899.

C. propinquus, p. 334, *pectoralis*, p. 335, Sumatra, SCHENKLING, Ann. Mus. Genova xl; *C. trifasciatus*, New Guinea, SCHENKLING, p. 136, t. c. : n. spp.

Cardiostichus mechowi and allies, characters, KRAATZ, p. 89, Deutsche ent. Zeitschr. 1899.

Cephaloclerus rufofemoratus, *cyanescens*, W. Africa, KRAATZ, p. 106, Deutsche ent. Zeitschr. 1899, n. spp.

Chariessa nigra, W. Africa, KRAATZ, p. 104, t. c. n. sp.

Chlorocnemis viridicollis, New Guinea, p. 140, *pectoralis*, Australia, *maculata*, New Guinea, p. 141, SCHENKLING, Ann. Mus. Genova xl, n. spp.

Cladiscus weyersii, Sumatra, KRAATZ, p. 213, Ann. Soc. ent. Belgique 1899; *C. laniger*, Sumatra, SCHENKLING, p. 331, Ann. Mus. Genova xl : n. spp.

Clerus laterinotatus, W. Africa, KRAATZ, p. 88, Deutsche ent. Zeitschr. 1899, n. sp.

Corynetes ? rufus, Cameroons, KRAATZ, p. 107, t. c. n. sp.

Corynommadius n. g. for *C. speciosus*, n. sp., New Guinea, SCHENKLING, p. 163, Ann. Mus. Genova xl.

Cylidroctenus n. g. for *Tillicera chalybœa* White, KRAATZ, p. 214, Ann. Soc. ent. Belgique 1899.

Cylidrus wallacei = (*intermedius* Schenkl.), SCHENKLING, p. 331, Ann. Mus. Genova xl.

C. pectoralis, p. 81, *niger*, p. 82, W. Africa, KRAATZ, Deutsche ent. Zeitschr. 1899; *C. sumatranus*, Sumatra, KRAATZ, p. 212, Ann. Soc. ent. Belgique 1899 : n. spp.

Epiclines bimaculata, W. Africa, KRAATZ, p. 87, Deutsche ent. Zeitschr. 1899, n. sp.

Eucymatodera n. g., p. 333, for *E. variabilis*, n. sp., E. Africa, p. 334, SCHENKLING, Ann. Mus. Genova xl.

Euplacocerus n. g., for *E. apicalis*, p. 85, *dimidiatus*, p. 86, n. spp., W. Africa, KRAATZ, Deutsche ent. Zeitschr. 1899.

Evenus perrieri, Madagascar, FAIRMAIRE, p. 531, Ann. Soc. ent. Belgique 1899, n. sp.

Hadrostigmatium n. g., for *St. nigrofasciatum* Kuw., KRAATZ, p. 90, Deutsche ent. Zeitschr. 1899.

Ichnea kuwerti n. n. for *vitticollis* Kuw., LOHDE, p. 305, Ent. Nachr. xxv.

Laricobius united with *Derodontidæ* to form the family *Laricobiidæ*, GANGLBAUER, p. 766, Käf. Mitteleur. iii.

Leptoclerus n. g. near *Cymatoderus*, for *L. amoenus*, n. sp., W. Africa, KRAATZ, p. 83, Deutsche ent. Zeitschr. 1899.

Metademius n. g. near *Natalis*, for *M. penicillatus*, n. sp., New Guinea, SCHENKLING, p. 5, Ann. Mus. Genova xl.

Microstigmatium n. g. for *M. unifasciatum*, *ruficeps*, p. 100, *suturale*, p. 101, n. spp., Cameroons, KRAATZ, Deutsche ent. Zeitschr. 1899.

Myopocera n. g. near *Ichnea*, for *M. basalis*, n. sp., New Guinea, SCHENKLING, p. 166, Ann. Mus. Genova xl.

Natalis; table of species, BLACKBURN, pp. 29, 30, Tr. R. Soc. S. Austral. xxiii.

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Necrobia kelecsenyi, Hamburg, GEBIEN, p. 97, Ent. Nachr. xxv, n. sp.

Necrobinus anthracinus n. n. for *defunctorum* Reitt. nec Walth., BEDEL, p. 115, Bull. Soc. ent. France 1899.

Neohydnus pallipes, p. 215, *caviceps*, *flavipennis*, p. 216, Sumatra, KRAATZ, Ann. Soc. ent. Belgique 1899, n. spp.

Ommadius ramosus, p. 146, *pallifrons*, p. 147, *wokanensis*, p. 148, *propinquus*, p. 149, *marginatus*, p. 150, *marginicollis*, p. 151, *smaragdinus*, p. 152, *carinipennis*, p. 153, *gracilis*, p. 154, *dimidiatipennis*, p. 155, *laciniatus*, p. 156, *socius*, p. 157, New Guinea, *ternatensis*, *bituberculatus*, Ternate, p. 158, *alter*, p. 159, *substriatus*, p. 160, *minutus*, p. 161, New Guinea, SCHENKLING, Ann. Mus. Genova xl; *O. pulcherrimus*, Sumatra, p. 338, *ruficrus*, Engano, p. 340, *vicinus*, p. 341, *flavipes*, p. 342, Mentawei, *abdominalis*, Borneo, *undatus*, Sumatra, p. 343, SCHENKLING, Ann. Mus. Genova xl : n. spp.

Opetiopalpus semiruber, Algeria, BEDEL, p. 115, Bull. Soc. ent. France 1899, n. sp.

Opilo mollis, habits, HÖLSCHER, p. 43, Illustr. Zeitschr. Ent. iv.

Orthrius sumatranus, Sumatra, SCHENKLING, p. 335, Ann. Mus. Genova xl; *O. lateralis*, Amboina, *ternatensis*, p. 138, *bicolor*, p. 139, Ternate, SCHENKLING, t. c. : n. spp.

Oxystigmatium n. g., p. 90, for *O. spinipenne*, n. sp., p. 91, W. Africa, KRAATZ, Deutsche ent. Zeitschr. 1899.

Paradoxocerus n. g., for *P. fulvus*, n. sp., Cameroons, KRAATZ, p. 84, t. c.

Paratillus carus, var. n. *sumatranus*, KRAATZ, p. 217, Ann. Soc. ent. Belgique 1899.

Phæocyclotomus piceocinctus, p. 92, *basalis*, p. 93, *rufipes*, p. 95, *pictipennis*, *fasciatus*, p. 98, Cameroons, KRAATZ, Deutsche ent. Zeitschr. 1899; *P. fulvus*, New Guinea, *celebensis*, Celebes, p. 144, *imitator*, New Guinea, p. 145, SCHENKLING, Ann. Mus. Genova xl : n. spp.

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Phlogistus foveicollis=(*corallipes* Chev.), SCHENKLING, p. 336, Ann. Mus. Genova xl.

Placocerus apicalis, Cameroons, KRAATZ, p. 84, Deutsche ent. Zeitschr. 1899, n. sp.

Pseudoclerops novæguineensis, New Guinea, SCHENKLING, p. 139, Ann. Mus. Genova xl, n. sp.

Pyrrhostigmatium n. g. for *P. rufum*, p. 96, *parvum*, *rufopiceum*, p. 97, n. spp., Cameroons, KRAATZ, Deutsche ent. Zeitschr. 1899.

Stigmatium nigriventre, Borneo, SCHENKLING, p. 337, Ann. Mus. Genova xl, n. sp.

Tenerus kraatzi n. n. for *maculicollis* Kr., *conradti* n. n. for *vitticollis* Kr., *kolbei* n. n. for *maculiceps* Kr., *lewisi* n. n. for *cyaneus* Lew., LOHDE, p. 305, Ent. Nachr. xxv.

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adustus, p. 104, W. Africa, KRAATZ, Deutsche ent. Zeitschr. 1899; *T. puncticollis*, Sumatra, KRAATZ, p. 216, Ann. Soc. ent. Belgique 1899; *T. politus*, *sanguineus*, p. 344, *albofemoratus*, Nias Id., *subsimilis*, Engano, p. 345, SCHENKLING, Ann. Mus. Genova xl; *T. ochraceus*, New Guinea, SCHENKLING, p. 164, t. c. : n. spp.

Thanasimus anthicoides var. n. *bimaculatus*, *T. chinensis* referred to *Gyponyx*, SCHENKLING, p. 336, Ann. Mus. Genova xl.

Tillus notatus var. n. *tristis*, SCHENKLING, p. 332, Ann. Mus. Genova xl.

T. rufopiceus, E. Africa, id. l. c.; *T. modestus*, Cameroons, KRAATZ, p. 82, Deutsche ent. Zeitschr. 1899; *T. sumatranus*, Sumatra, KRAATZ, p. 214, Ann. Soc. ent. Belgique 1899 : n. spp.

Trichodes: varr. n. from W. Asia, REITTER, p. 276, Deutsche ent. Zeitschr. 1899; synonymy of Chevrolat's species, REITTER, pp. 53–56, Wien. ent. Zeit. 1899.

Nestonotus gestroi, New Guinea, SCHENKLING, p. 142, Ann. Mus. Genova xl, n. sp.

LYMEXYLONIDÆ.

Lymexylon adelaidæ, Australia, BLACKBURN, p. 34, Tr. R. Soc. S. Austral. xxiii, n. sp.

PTINIDÆ.

[*Cf.* CHOBAUT (213), FAIRMAIRE (354), KARAWIEW (617), PÉRINGUEY (889), PIC (905, 907, 908, 922), SCHILSKY (1022).]

Metamorphosis of alimentary canal, KARAWIEW (617).

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Cœnocara ganglbaueri, Asia Minor, SCHILSKY, Käf. Eur. Heft xxxvi, lxv, n. sp.

Damarus n. g. near *Mezium*, for *D. singularis*, n. sp., S. Africa, pl. vii, fig. 18, PÉRINGUEY, p. 244, Ann. S. African Mus. i.

Diplocotidus n. g., for *D. formicola*, n. sp., Cape Colony, pl. vii, fig. 13, PÉRINGUEY, p. 245, t. c.

Episernus gentilis, var. *obscurior*, PIC, p. 25, Bull. Soc. zool. France 1899.

Ernobius cupressi, p. 104, *juniperi*, p. 117, Avignon, CHOBAUT, Bull. Soc. ent. France 1899; *E. normandi*, Tunis, p. 24, *syriacus*, Akbès, p. 25, PIC, Bull. Soc. zool. France 1899 : n. spp.

Hedobia tricostata=(*quinquecostata* Sch.), PIC, p. 231, Bull. Soc. ent. France 1899; *H. imperialis* var. *alpina*, PIC, p. 156, Bull. Soc. Autun xi, 2.

Lasioderma corsicum, Corsica, xxiv, *impunctatum*, Algeria, xxvi, *costulatum*, Turcomenia, xxviii, *mulsanti*, Spain, xxix, *melanocephalum*, Gibraltar, xxxii, SCHILSKY, Käf. Eur. xxxvi, n. spp.

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Rhadine parmata=(*Synanobium ganglbaueri* Sch.), PIC, p. 231, Bull. Soc. ent. France 1899.

Theca reitteri n. n. for *dorcatomoides* Reitt. 1885, SCHILSKY, Käf. Eur. xxxvi, xl.
T. (*Anomotheca* subg. n.) *championi*, Gibraltar, Tangier, xli, *T. conicicollis*, Greece, xlviii, *striatula*, hab.?, li, SCHILSKY, Käf. Eur. xxxvi, n. spp.
Trigonogenius perrieri, Madagascar, FAIRMAIRE, p. 483, Ann. Soc. ent. France 1899, n. sp.
Xylotheca meieri var. n. *minor*, MEIER, p. 72, Ent. Nachr. xxv.

BOSTRICHIDÆ.

[*Cf.* HUBBARD (577), LESNE (402, 757), SCHILSKY (1022).]

Dinapate wrightii, habits and habitat, HUBBARD, pp. 83–89, Ent. News Philad. x.
Phonapate madecassa, Madagascar, LESNE, p. 10, Mem. Soc. zool. France 1899, n. sp.
Sinoxylon geminatum, N. China, SCHILSKY, Käf. Eur. xxxvi, lxxx, n. sp.
Xylopertha heydeni, Algeria, SCHILSKY, t. c. xxxvi, cxii; *X. obtusidentata*, E. Africa, LESNE, p. 228, Bull. Mus. Paris 1899 : n. spp.

TENEBRIONIDÆ (incl. RHYSOPAUSSIDES).

[*Cf.* BLACKBURN (106), CHOBAUT (216), FAIRMAIRE (352, 354, 360, 362, 402, 616), HELLER (526), KRAATZ (699), LEA (745), LÉGER & HAGENMULLER (753, 754), LINELL (766), PÉRINGUEY (889), PIC (914, 916, 924, 933), REITTER (976, 978, 979, 980, 983), WASMANN (1195, 1197).]

Hemipeplus, placed in *Cucujidæ*, should be transferred to *Heteromera*, SHARP, p. 512, Biol. Centr.-Amer. Col. ii, pt. 1.
Cossyphodinus (n. g. with heteromerous tarsi), cf. *Colydiidæ*.
Malpighian tubes, structure, LÉGER & HAGENMULLER (753, 754).
Acanthomera namaqua, *asperipennis*, p. 313, *hottentota*, *consocia*, p. 314, Cape Colony, PÉRINGUEY, Ann. S. African Mus. i, n. spp.
Acastus parvulus, S. Africa, pl. vii, f. 9, p. 315, PÉRINGUEY, t. c. n. sp.
Adelium regulare, *heterodoxum*, p. 582, *minutum*, p. 583, *capitatum*, p. 584, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii, n. spp.
Adelphinus ciliatus, Algeria, PIC, p. 113, Miscell. ent. vii, n. sp.
Adesmia simplex, pl. vi, f. 1, *A.* (*Onymachris*) *gariesa*, p. 246, *scutulata*, f. 2, p. 247, S. Africa, PÉRINGUEY, Ann. S. African Mus. i, n. spp.
Amiantus multicostatus, *octocristatus*, Delagoa, FAIRMAIRE, p. 181, Bull. Soc. Vaudoise xxxv; *A. manicanus*, S. Africa, PÉRINGUEY, p. 266, Ann. S. African Mus. i : n. spp.
Anæmia palæstina, Jericho, PIC, p. 278, Bull. Soc. ent. France 1899; *A. cornuta*, Arabia, PIC, p. 121, Bull. Soc. Autun xi, 2 : n. spp.
Anœdus texanus, Brownsville, LINELL, p. 182, P. ent. Soc. Washington iv, n. sp.
Anomalipus agrestis, p. 303, *turpis*, p. 304, S. Africa, PÉRINGUEY, Ann. S. African Mus. i, n. spp.
Apistocerus n. g. *Rhysopaussides*, p. 78, for *A. wasmanni*, n. sp., Congo, p. 79, FAIRMAIRE, Bull. Soc. ent. France 1899.
Argasidus n. g. *Adelostomini*, for *A. squamosus*, n. sp., Cape Colony, PÉRINGUEY, p. 251, pl. vi, f. 7, Ann. S. African Mus. i.
Arrhenoplita erecta, Sydney, LEA, p. 581, P. Linn. Soc. N. S. Wales xxiii, n. sp.
Asida fallaciosa, Natal, FAIRMAIRE, p. 178, Bull. Soc. Vaudoise xxxv; *A. devia*, p. 258, *natalis*, p. 259, *transvaalensis*, *zula*, p. 260, *consobrina*, *zambesiana*, p. 261, *aberrans*, *pauperata*, p. 262, *mossambica*, *turbida*,

umbrina, p. 263, *namqua*, *lutulenta*, p. 264, *unigena*, pl. vi, f. 8, *lecta*, p. 265, *legitima*, p. 266, S. Africa, PÉRINGUEY, Ann. S. African Mus. i : n. spp.

Astalbus n. g. near *Hypophlœus* for *A. scrobicollis*, n. sp., Madagascar, FAIRMAIRE, p. 484, Ann. Soc. ent. France 1899.

Asthenochirus foveolatus, Mozambique, PÉRINGUEY, p. 316, Ann. S. African Mus. i, n. sp.

Camariodes convexicollis, Madagascar, FAIRMAIRE, p. 536, Ann. Soc. ent. Belgique 1899, n. sp.

Carabelops n. g. near *Helops*, for *C. aenescens* n. sp., Madagascar, FAIRMAIRE, p. 534, t. c.

Chalchopterus puer, p. 41, *iris*, p. 43, *crœsus*, *proditor*, p. 44, *gracilicornis*, *boops*, p. 45, *zonatus*, *costatus*, p. 46, *acutangulus*, p. 47, *mundus*, p. 48, *jucundus*, p. 50, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiii, n. spp.

Cœlocnemis rugosa, California, LINELL, p. 181, P. ent. Soc. Washington iv, n. sp.

Conibius rotundicollis, Texas, LINELL, p. 182, t. c. n. sp.

Coripera geminata, Australia, LEA, p. 588, P. Linn. Soc. N. S. Wales xxiii, n. sp.

Cryptochile echinata, p. 249, *serrata*, p. 250, Cape Colony, PÉRINGUEY, Ann. S. African Mus. i, n. spp.

Damatris similis, Madagascar, FAIRMAIRE, p. 535, Ann. Soc. ent. Belgique 1899, n. sp.

Derostrophus forcipatus, pl. vi, fig. 4, *hottentottus*, p. 252, *damarinus*, *consobrinus*, p. 253, *maxillosus*, *laticollis*, *dissidens*, p. 254, *humilis*, p. 255, S. Africa, PÉRINGUEY, Ann. S. African Mus. i, n. spp.

Dichillus tenellus, India, WASMANN, p. 165, Deutsche ent. Zeitschr. 1899, n. sp.

Dila transversecordata, Kurdistan, REITTER, p. 203, t. c. n. sp.

Dystalica parallela, W. Australia, LEA, p. 586, P. Linn. Soc. N. S. Wales xxiii, n. sp.

Echinotus dispar, S. Africa, PÉRINGUEY, p. 302, Ann. S. African Mus. i, n. sp.

Eleodes insularis, Lower California, LINELL, p. 181, P. ent. Soc. Washington iv, n. sp.

Erodius scaber, characters, HEYDEN, p. 255, Deutsche ent. Zeitschr. 1899.

Euleantus æqualipennis, Damaraland, PÉRINGUEY, p. 249, pl. vi, fig. 3, Ann. S. African Mus. i, n. sp.

Eusattus coquilletti, California, LINELL, p. 180, P. ent. Soc. Washington iv, n. sp.

Ghaleca n. g. *Amarygmini*, p. 316, for *G. læta*, n. sp., Cape Colony, pl. vii, fig. 10, p. 317, PÉRINGUEY, Ann. S. African Mus. i.

Glyptophrynus n. g. near *Phrynocolus*, for *G. tenuesculptus*, n. sp., Madagascar, FAIRMAIRE, p. 532, Ann. Soc. ent. Belgique 1899.

Gonocnemis opatroides, *binodosa*, p. 114, *pallipes*, *viridipennis*, p. 115, *viridis*, p. 116, *carinata*, *debilicornis*, p. 117, Africa, KRAATZ, Deutsche ent. Zeitschr. 1899, n. spp.

Helœus; revision and tabulation, BLACKBURN, pp. 35–38, Tr. R. Soc. S. Austral. xxiii.

H. scaphiformis, p. 38, *modicus*, p. 39, *subseriatus*, p. 40, Australia, id. t. c. n. spp.

Helops carinatus, *violaceus*, *H.* (*Stenomax*) *anatolicus*, Asia Minor, PIC, p. 411, Bull. Soc. ent. France 1899, n. spp.

Herlesa (sub. *Micipsa*) *gastonis* Fairm. = (*globicollis* Reitt.), REITTER, p. 162, Wien. ent. Zeit. 1899.

Hoplonyx asper, Cape Colony, PÉRINGUEY, p. 315, Ann. S. African Mus. i, n. sp.

Hypomelus servus, p. 294, *plausibilis*, *flagrans*, pl. vi, fig. 12, p. 295, S. Africa, PÉRINGUEY, t. c. n. spp.

Hypophlœus perrieri, Madagascar, FAIRMAIRE, p. 483, Ann. Soc. ent. France 1899, n. sp.

Læna turcica, Turkey, p. 282, *theana*, *obscuricornis*, p. 283, *angorensis*, p. 284, *striolata*, p. 285, Asia Minor, REITTER, Deutsche ent. Zeitschr. 1899, n. spp.

Lasiostola seminuda, Samaracand, p. 277, *tomentosa*, Buchara, p. 278, REITTER, t. c. n. spp.

Leichenum; table of species, REITTER, pp. 83–86, Ent. Nachr. xxv.

L. caucasicum, p. 84, *caudatum*, Lenkoran, *incisum*, Ordubad, p. 85, REITTER, t. c. n. spp.

Leptoscapha = (*Brachypophlœus* Fairm.), *dimidiatipennis* Fairm. (sub *Hypophlœus*) = (*basalis* All.), ALLUAUD, p. 342, Bull. Soc. ent. France 1899.

Licinoma nitidissima, Australia, LEA, p. 587, P. Linn. Soc. N. S. Wales xxiii, n. sp.

Machla interrupta, Delagoa Bay, FAIRMAIRE, p. 178, pl. ii, fig. 6, Bull. Soc. Vaudoise xxxv; *M. agrestis*, p. 256, *lita*, p. 257, Cape Colony, PÉRINGUEY, Ann. S. African Mus. i : n. spp.

Machlomorpha n. g. near *Machla*, p. 257, for *M. altitudinis*, *diversa*, n. spp., S. Africa, PÉRINGUEY, Ann. S. African Mus. i.

Melanocratus major, Madagascar, FAIRMAIRE, p. 533, Ann. Soc. ent. Belgique 1899, n. sp.

Micrantereus externus, Delagoa, FAIRMAIRE, p. 182, pl. ii, fig. 17, Bull. Soc. Vaudoise xxxv; *M. validus*, pl. vii, figg. 6, 11, p. 305, *spissus*, fig. 3, *ambiguus*, p. 306, *propinquus*, *parvulus*, p. 307, *litigiosus*, p. 308, S. Africa, PÉRINGUEY, Ann. S. African Mus. i : n. spp.

Mictopsis n. g. near *Hyperchalca*, for *M. laticollis*, n. sp., Madagascar, FAIRMAIRE, p. 538, Ann. Soc. ent. Belgique 1899.

Nesogena cottæ, Madagascar, FAIRMAIRE, p. 537, t. c.; *N. hypocyanea*, p. 484, *rufimembris*, *cyanescens*, *obscurina*, p. 485, *rufovirens*, p. 486, Madagascar, FAIRMAIRE, Ann. Soc. ent. France 1899 : n. spp.

Nycteropus capensis, S. Africa, PÉRINGUEY, p. 304, Ann. S. African Mus. i, n. sp.

Ograbies n. g. near *Psammodes*, for *O. singularis*, n. sp., Namaqualand, PÉRINGUEY, p. 293, t. c.

Oncotus bistriatus, Delagoa, FAIRMAIRE, p. 180, Bull. Soc. Vaudoise xxxv, n. sp.

Pachynotelus haagi, Cape Colony, PÉRINGUEY, p. 250, pl. vi, fig. 4, Ann. S. African Mus. i, n. sp.

Paragonocnemis n. g. for *G. foveicollis* Fairm. and *P. sculpticollis*, n. sp., Cameroons, KRAATZ, p. 119, Deutsche ent. Zeitschr. 1899.

Penthicus fartilis, Transcaspian, REITTER, p. 206, t. c. n. sp.

Perdicus n. g. near *Asphaltesthes*, for *P. anthrophilus*, n. sp., Madagascar, FAIRMAIRE, p. 386, Bull. Soc. ent. France 1899.

Phaleria: table of French; *P. atlantica* n. n. for *bimaculata* Woll., FAUVEL, pp. 77–70, Rev. Ent. franc. xviii.

Pheugonius n. g. near *Prioscelis*, p. 313, for *P. borneensis*, n. sp., Pontianak, p. 314, FAIRMAIRE, Bull. Soc. ent. France 1899.

Phrynocolus ovipennis, Madagascar, FAIRMAIRE, p. 533, Ann. Soc. ent. Belgique 1899, n. sp.

Phthora bicolor, Algeria, *millingeni*, Mesopotamia, *ægyptiaca*, Ramlé, REITTER, p. 159, Wien. ent. Zeit. 1899, n. spp.

Platydema inquilinum, Arizona, LINELL, p. 183, P. ent. Soc. Washington iv, n. sp.

Platyscelis hauseri, Tibet, REITTER, p. 205, Deutsche ent. Zeitschr. 1899, n. sp.

Pogonoxenus n. g. *Ulomini*, p. 172, for *P. kraatzi*, n. sp., Cameroons, p. 173, pl. ii, fig. 8, WASMANN, t. c.

Porphyryba latecincta, Madagascar, FAIRMAIRE, p. 536, Ann. Soc. ent. Belgique 1899, n. sp.

Psammodes junodi, p. 179, pl. ii, fig. 18, *cinctipennis*, fig. 16, p. 180, Delagoa, FAIRMAIRE, Bull. Soc. Vaudoise xxxv; *P. kaorooensis*, pl. vi, fig. 10, *hottentottus*, fig. 9, p. 267, *rotundipennis*, *meracus*, p. 268, *mashunus*, fig. 13, *mulleri*, fig. 11, p. 269, *rusticus*, *approximans*, p. 270, *plausibilis*, *profanus*, p. 271, *intermedius*, *prœliator*, p. 272, *solitarius*, *flagrans*, *vietus*, p. 273, *dissociatus*, *manifestus*, p. 274, *junodi*, fig. 15, *algoensis*, p. 275, *valens*, *integer*, p. 276, *debilis*, *profugus*, p. 277, *adventitus*, *lactulus*, p. 278, *procursus*, *vaticinus*, p. 279, *placidus*, *exilis*, p. 280, *incongruens*, fig. 17, *cœlatus*, fig. 16, p. 281, *gariesus*, *præstans*, p. 282, *mendax*, *perfidus*, *probus*, p. 283, *lethargicus*, p. 284, *myrmidon*, *specularis*, *verecundus*, p. 286, *dubiosus*, *vexator*, p. 287, *vagus*, *consors*, p. 288, *imitator*, *sperabilis*, p. 289, *congruens*, *mendicus*, *licitus*, p. 290, *similis*, *dolosus*, p. 291, *inquinatus*, *fortuitus*, p. 292, S. Africa, PÉRINGUEY, Ann. S. African Mus. i : n. spp.

Psammodophysis n. g. near *Psammodes*, for *P. probes*, n. sp., Cape Colony, PÉRINGUEY, p. 296, t. c.

Pseudogena n. g. near *Nesogena*, for *P. polyzona*, n. sp., Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique 1899.

Schizillus n. g. near *Dichillus*, for *S. rogersi*, n. sp., India, WASMANN, p. 166, Deutsche ent. Zeitschr. 1899.

Scotœus seriatopunctatus, Philippines, HELLER, p. 8, Abh. Mus. Dresden vii, No. 8, n. sp.

Scotinesthes asidinus, Madagascar, FAIRMAIRE, p. 19, Mem. Soc. zool. France xii, n. sp.

Sphœromatris n. g. near *Damatris*, p. 535, for *S. aurovittata*, n. sp., Madagascar, p. 536, FAIRMAIRE, Ann. Soc. ent. Belgique 1899.

Stenocara namaqua, *placita*, Cape Colony, PÉRINGUEY, p. 248, Ann. S. African Mus. i, n. spp.

Stenosis dentipennis, p. 168, *wroughtoni*, p. 169, India, WASMANN, Deutsche ent. Zeitschr. 1899, n. spp.

Suarezius cavernosus, Madagascar, FAIRMAIRE, p. 536, Ann. Soc. ent. Belgique 1899, n. sp.

Tetranillus n. g. near *Microtelus*, for *T. costatus*, n. sp., India, WASMANN, p. 167, Deutsche ent. Zeitschr. 1899.

Trachynotidus n. g. near *Trachynotus*, p. 296, for *T. manifestus*, *cognatus*, p. 297, *eximius*, p. 298, n. spp., S. Africa, PÉRINGUEY, Ann. S. African Mus. i.

Trachynotus nitens, p. 298, *haagi*, pl. vi, fig. 18, *adventitus*, p. 299, *rusticus*, *plicipennis*, p. 300, *lutulentus*, *tantillus*, p. 301, *meracus*, p. 302, S. Africa, PÉRINGUEY, t. c. n. spp.

Trigonoscelis costatissima, Tibet, REITTER, p. 204, Deutsche ent. Zeitschr. 1899, n. sp.

Umslatus n. g. *Meracanthini*, for *U. agilis*, n. sp., Cape Colony, PÉRINGUEY, p. 312, Ann. S. African Mus. i.

Vutsimus n. g. *Meracanthini*, p. 308, for *V. prætorius*, pl. vii, fig. 12, p. 309, *litigiosus*, *natalensis*, p. 310, *chrysomelides*, *transvaalensis*, *coriaceipennis*, fig. 4, p. 311, n. spp., S. Africa, PÉRINGUEY, t. c.

Xenus n. g. near *Derostrophus*, p. 255, for *X. tricorniger*, n. sp., S. Africa, p. 256, pl. vi, fig. 6, PÉRINGUEY, t. c.

Zophosis viridilimbata, Tunis, CHOBAUT, p. 409, Bull. Soc. ent. France 1899, n. sp.

CISTELIDÆ.

[*Cf.* FAIRMAIRE (352, 402), LINELL (766).]

Allecula praticolor, Madagascar, FAIRMAIRE, p. 21, Mem. Soc. zool. France xii, n. sp.

Cacoplesia bicolor, *aenescens*, *cyanicollis*, Madagascar, FAIRMAIRE, p. 22, t. c. n. spp.

Charisius floridanus, N. America, LINELL, p. 184, P. ent. Soc. Washington iv, n. sp.

Cistela mauritiana, Mauritius, FAIRMAIRE, p. 540, Ann. Soc. ent. Belgique 1899, n. sp.

Cteniopus luteus var. n. *obscurithorax*, PIC, p. 300, Bull. Soc. ent. France 1899.

Eubalia aurozonata, p. 539, *rufovittata*, p. 540, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique 1899; *E. zonalis*, Madagascar, FAIRMAIRE, p. 21, Mem. Soc. zool. France xii : n. spp.

PYTHIDÆ.

Canadian *Pythidæ*, WICKHAM, pp. 57–61, Canad. Ent. 1899.

MELANDRYIDÆ.

Diegoa n. g. near *Marolia*, p. 496, for *D. picta*, n. sp., Madagascar, p. 487, FAIRMAIRE, Ann. Soc. ent. France 1899.

Dircæa tetraspilota n. n. for *quadrimaculata* Lea, LEA, p. 590, P. Linn. Soc. N. S. Wales xxiii.

Mycetochara satanula, *kamtschatka*, *angustifrons*, p. 155, *seidlitzi*, Circassia, *graciliformis*, Croatia, p. 156, *obtusicollis*, Armenia, p. 157, *maculipes*, Asia Minor, p. 158, REITTER, Ent. Nachr. xxv, n. spp.

Osphya bipunctata varr., DONISTHORPE, p. 266, Ent. Rec. xi.

LAGRIIDÆ.

Entypodera nigrithorax, Camaroons, PIC, p. 4, Miscell. Ent. vii, n. sp.

Nemostira rostrifera, Madagascar, FAIRMAIRE, p. 541, Ann. Soc. ent. Belgique 1899, n. sp.

ANTHICIDÆ, PEDILIDÆ.

[*Cf.* DESBROCHERS (278), FAIRMAIRE (354), PIC (905, 906, 912, 917, 918, 921, 927, 928, 932, 933), REITTER (917).]

Anthicidæ of France and Corsica, DESBROCHERS (278).

Amblyderus sabulosus, Jaffa, PIC, p. 173, Rev. Sci. Bourbonnais xii, n. sp.

Anthicus violaris etc., noticed, PIC, p. 412, Bull. Soc. ent. France 1899.

A. subcyaneus, Tunis, p. 19, *hispanicus*, Spain, *cylindricus*, Roumania, p. 20, PIC, Misc. ent. vii; *A. gigas*, Thessaly, PIC, p. 86, Bull. Soc. ent. France 1899; *A.* (*Cyclodinus*) *moricei*, Jericho, p. 174, *schmiedeknechti* Rhodes, *obscuriceps*, Bethlehem, p. 177, PIC, Rev. Sci. Bourbonnais xii; *A. erythræus*, "Asie: Erythræa", *bisignatus*, W. Africa, PIC, p. 27, Bull. Soc. zool. France 1899; *A. fauveli*, S. Africa, PIC, p. 106, Rev. Ent. franc. xviii; *A. pressicollis*, p. 489, *apterioides*, *quadraticeps*, p. 490, Madagascar, FAIRMAIRE, Ann. Soc. ent. France 1899; *A. maindroni*, *lesnei*, Kurrachee, p. 30, *trapezithorax*, *mocquerysi*, p. 31, Madagascar, PIC, Bull. Mus. Paris 1899; *A. buyssoni*, p. 77,

externus, *harmandi*, p. 78, Sikkim, PIC, t. c.; *A. viridipennis*, p. 75, *prolatithorax*, p. 76, Khasia hills, PIC, Rev. Ent. franc. xviii; *A.* (*Ischyropalpus*) *jatahyensis*, Brazil, PIC, p. 189, Naturaliste 1899; *A. hadjaziensis*, Arabia, *armeniacus*, Armenia, *A.* (*Acanthinus*) *bimaculifer*, Brazil, PIC, p. 264, t. c. : n. spp.

Canifa fuscula var. *algirica*, PIC, p. 121, Bull. Soc. Autun xi, 2.

C. mozabita, Algeria, PIC, p. 123, t. c. n. sp.

Egidyella n. g. near *Scraptia?*, p. 284, for *E. prophetea* n. sp., Buchara, p. 285, pl. iv, fig. 6, REITTER, Wien. ent. Zeit. 1899.

Euproclus n. g. near *Anthicus*, for *E. perrieri*, n. sp., Madagascar, FAIRMAIRE, p. 488, Ann. Soc. ent. France 1899.

Formicomus mutillarius var. *tonkineus*, PIC, p. 105, Rev. Ent. franc. xviii.

F. arabicus, *subelongatus*, Arabia, PIC, p. 264, Naturaliste 1899; *F. tuberculithorax*, p. 73, *kraatzi*, p. 74, Cameroons, PIC, Rev. Ent. franc. xviii; *F.* (*Anthelephilus*) *subtruncatus*, S. Africa, PIC, p. 105, t. c. : n. spp.

Leptaleus mocquerysi, Madagascar, PIC, p. 189, Naturaliste 1899, n. sp.

Macratria brunnipennis, Bône, PIC, p. 18, Misc. ent. vii; *M. harmandi*, Sikkim, PIC, p. 77, Bull. Mus. Paris 1899 : n. spp.

Mecynotarsus pulicarius, *dorsiger*, Madagascar, FAIRMAIRE, p. 489, Ann. Soc. ent. France 1889, n. spp.

Notoxus transcaspicus, Transcaspian, PIC, p. 19, Misc. ent. vii; *N. brevis*, Madagascar, PIC, p. 189, Naturaliste 1899 : n. spp.

Pristocyphus angusticollis, Madagascar, FAIRMAIRE, p. 488, Ann. Soc. ent. France 1899; *P. bouvieri*, Madagascar, PIC, p. 29, Bull. Mus. Paris 1899 : n. spp.

Stereopalpus? angusticollis, Sikkim, PIC, p. 76, Bull. Mus. Paris 1899, n. sp.

Tomoderus kraatzi, Cameroons, PIC, p. 74, Rev. Ent. franc. xviii, n. sp.

Xylophilus (*Olotelus*) *curtipennis*, Caramania, *obscurithorax*, Rhodes, *nigriceps*, Lebanon, PIC, p. 172, Rev. Sci. Bourbonnais xii; *X. latissimus*, Bolivia, PIC, p. 28, Bull. Soc. zool. France 1899 : n. spp.

RHIPIPHORIDÆ.

Supplement to the Munich Catalogue, CHAMPION, pp. 39–43, Ann. Soc. ent. Belgique 1899.

Emenadia diversiceps, *difficilis*, p. 55, *championi*, p. 56, *capito*, *punctulaticeps*, p. 57, *interioris*, p. 58, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiii, n. spp.

Euctenia occidentalis, W. Australia, BLACKBURN, p. 51, t. c. n. sp.

Evaniocera meyricki, *perthensis*, W. Australia, BLACKBURN, pp. 52, 53, t. c. n. spp.

Rhipidius australasiæ, Eyre's penins., BLACKBURN, p. 59, t. c. n. sp.

MORDELLIDÆ.

Mordella nigroguttata, Madagascar, FAIRMAIRE, p. 487, Ann. Soc. ent. France 1899, n. sp.

Pentaria abderoides varr., PIC, p. 323, Bull. Soc. ent. France 1899.

CANTHARIDÆ.

[*Cf.* BEDEL (75), BLACKBURN (106), BLEUSE (107A), CHAMPION (204), COCKERELL (238), DESBROCHERS (278), ESCHERICH (347), FAIRMAIRE (402), PÉRINGUEY (889), PIC (914).]

Supplement to the Catalogue of *Cantharidæ*, CHAMPION (204).
Cantharidæ of France and Corsica, DESBROCHERS (278).
Coryna ottomana, Turkey, ESCHERICH, p. 109, Wien. ent. Zeit. 1899, n. sp.
Goetymes pictipes, Victoria, BLACKBURN, p. 69, Tr. R. Soc. S. Austral. xxiii, n. sp.
Leonia neomexicana, New Mexico, COCKERELL, p. 416, Psyche viii, n. sp.
Lytta (*Sagitta*) *simplicicornis*, Jaffa, PIC, p. 278, Bull. Soc. ent. France 1899; *L. mera*, *mashuna*, *enona*, p. 318, *ovampoa*, p. 319, S. Africa, PÉRINGUEY, Ann. S. African Mus. i : n. spp.
Palæstra; spp. and synonymy, BLACKBURN, p. 69, Tr. R. Soc. S. Austral. xxiii.
Phodaga alticeps, habits, HUBBARD, p. 186, P. ent. Soc. Washington iv.
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Z. humerosa, Greece etc., p. 97, *aurociliata*, hab.?, *inculta*, Syria, p. 98, *tomentosa*, *serena*, Caucasus, *laticollis*, Caspian, *modesta*, Araxes Valley, p. 99, *pauper*, Spain, *kabylica*, p. 100, Marocco, *hauseri*, Turkestan, p. 101, *neglecta*, Greece, p. 102, *crux*, Turkestan, p. 103, *rosinæ*, Spain, *dokhtouroffi*, Turkestan, p. 104, *emiliæ*, Asia Minor, p. 105, *ciliciensis*, Taurus, *liliputana*, Turkestan, p. 106, ESCHERICH, t. c.; *Z. albilinea*, BEDEL, p. 382, *Z. bedeli*, BLEUSE, p. 383, Algeria, Bull. Soc. ent. France 1899 : n. spp.
Zonitis; revision and tabulation of Australian, BLACKBURN, pp. 59–65, Tr. R. Soc. S. Austral. xxiii.
Z. transgressor, p. 319, *suaveola*, *saga*, p. 320, S. Africa, PÉRINGUEY, Ann. S. African Mus. i; *Z. squalida*, Madagascar, FAIRMAIRE, p. 23, Mem. Soc. zool. France xii; *Z. cowleyi*, p. 65, *subrugata*, *queenslandica*, p. 66, *longipalpis*, p. 67, *yorkensis*, *carpentariæ*, p. 68, *aspericeps*, p. 69, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiii : n. spp.

ŒDEMERIDÆ.

[*Cf.* BLACKBURN (106), CHAMPION (203), FAIRMAIRE (354), PIC (933), SEIDLITZ (1055).]

Supplement to the Munich Catalogue, CHAMPION, pp. 43–61, Ann. Soc. ent. Belgique 1899.
SEIDLITZ continues his work on *Heteromera*; dealing now with *Œdemeridæ* (1055). It includes details of the larvæ, as well as a general account of the family.
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Alloxantha n. g. pp. 814 & 828, for *A. ochracea*, *lutea*, n. spp., Teneriff, p. 829, and ?*Ditylus pallidus*, Woll., SEIDLITZ, Ins. Deutsch. v, 2.
Ananca suturella, Madagascar, FAIRMAIRE, p. 490, Ann. Soc. ent. France 1899, n. sp.
Anoncodina subg. n. of *Nacerda*, pp. 765, 767, 786, SEIDLITZ, Ins. Deutsch. v, 2.
Ananconia n. g., pp. 816 & 831, for *Chitona martinii* Fairm., and *A. handlirschii*, n. sp., Algeria, p. 832, SEIDLITZ, t. c.
Ascleronia subg. n. of *Asclera*, pp. 848, 859, SEIDLITZ, t. c.
Ascleropsis subg. n. of *Asclera*, pp. 848, 860, SEIDLITZ, t. c.
Chromasclera subg. n. of *Asclera*, pp. 848, 859, SEIDLITZ, t. c.
Chrysanthia oranensis, Oran, p. 865, *reitteri*, Spain, p. 866, SEIDLITZ, t. c. n. spp.
Copidita baldiensis, p. 73, *kershawi*, *sloanei*, p. 74, *languida*, p. 75, *hilaris*, *pulchra*, p. 76, *dentipes*, p. 77, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiii, n. spp.

Ditylonia n. g. for Central-American *Ditylus*, SEIDLITZ, pp. 814, 827, Ins. Deutsch. v, 2.
Dohrnia eremita, Victoria, BLACKBURN, p. 78, Tr. R. Soc. S. Austral. xxiii, n. sp.
Dolichopyga n. g., pp. 816, 832, for *Probosca incana* Schm. and *acuminata* Reitt., SEIDLITZ, Ins. Deutsch. v, 2.
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Œdemerastra subg. n. of *Œdemera*, pp. 906, 923, SEIDLITZ, t. c.
Œdemerella subg. n. of *Œdemera*, pp. 907, 933, SEIDLITZ, t. c.
Œdemeronia subg. n. of *Œdemera*, pp. 906, 919, SEIDLITZ, t. c.
Oncomerina subg. n. of *Oncomera*, SEIDLITZ, pp. 885, 891, t. c.
Oxacis? *inquisitor*, *ornatipennis*, p. 80, *caviceps*, p. 81, *linearis*, p. 82, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiii, n. spp.
Probosca nigrofemorata, Algeria, PIC, p. 122, Bull. Soc. Autun xi, 2, n. sp.
Pseudolycus, characters of Australian, BLACKBURN, p. 85, Tr. R. Soc. S. Austral. xxiii.
P. elegantulus, p. 86, *puberulus*, p. 87, Australia, BLACKBURN, t. c. n. spp.
Trichananca and *Lemodes* distinguished, BLACKBURN, p. 83, t. c.

STREPSIPTERA.

Account of *Strepsiptera*, SHARP (1068), pp. 298–303.
Morphology of brood-funnel of ♀, ENTEMAN (345).

CURCULIONIDÆ.

[*Cf.* APFELBECK (25, 27), BERG (82), BLACKBURN (106), DANIEL (268), DESBROCHERS (273–277), FAIRMAIRE (352, 354, 402), FAUST (365–369), FLACK (388), HARTMANN (521, 522), HELLER (526), HEYDEN (534), KOLBE (670), LEA (745–747), LESNE (756), MÜLLER (856), PERKINS (894), PIC (925, 933), REITTER (972, 974, 976–979, 982, 985, 986), SCHULTZE (1030–1034), SCHWARZ (1039), SLOSSON (1087), STIERLIN (605, 1122, 1123), VAULOGER (1167), WASMANN (1196).]

Revision of Australian *Cryptorhynchides*, Part III, LEA (746).
Use of deciduous mandibles, LESNE (756).
Acalyptus caucasicus, S. Russia, REITTER, p. 281, Deutsche ent. Zeitschr. 1899, n. sp.
Acherus rubripes, p. 42, *discrepans*, p. 45, Africa, KOLBE, Stettin. ent. Zeit. lx, n. spp.
Acicnemis modesta, p. 47, *præculta*, p. 48, *laqueata*, *exclusa*, p. 49, New Guinea, FAUST, Ann. Mus. Genova xl, n. spp.
Aclees granulosus, New Guinea, FAUST, p. 36, t. c. n. sp.
Acythopeus binotatus, New Guinea, FAUST, p. 108, t. c. n. sp.
Adioristus fuegianus, Tierra del Fuego, BERG, Comun. Mus. Buenos Aires i, p. 63, n. sp.
Ægyptobaris, subg. n., cf. *Baris*.
Agametis æruginosa, New Guinea, FAUST, p. 104, Ann. Mus. Genova xl, n. sp.
Alcides otiosus, Congo, HARTMANN, p. 24, Deutsche ent. Zeitschr. 1899; *A. geminus*, *lameerei*, p. 411, *congoanus*, p. 413, *mouffleti*, p. 414, *lineellus*, *necopinus*, p. 415, Congo, FAUST, Ann. Soc. ent. Belgique 1899; *A. nivosus*, Madagascar, FAIRMAIRE, p. 542, t. c.; *A. larinoides*,

Madagascar, FAIRMAIRE, p. 25, Mem. Soc. zool. France xii; *A. blanchardi*, New Guinea, FAUST, p. 45, Ann. Mus. Genova xl : n. spp.

Amalthus ? sulcifrons, New Guinea, FAUST, p. 71, t. c. n. sp.

Amorphoidea bicolor, p. 44, *discedens*, p. 45, New Guinea, FAUST, t. c. n. spp.

Ampeloglypter sesostris, habits, WEBSTER, p. 53, pl. iii, Ent. News Philad. x.

Anchithyrus quadripunctatus, New Guinea, FAUST, p. 65, Ann. Mus. Genova xl, n. sp.

Aneulobus n. g. *Hylobiini*, for *A. decolor*, *horridipes*, n. spp., Madagascar, FAUST, p. 10, Abh. Mus. Dresden, Festschrift, No. 2.

Anorthorrhinus apicalis, Tasmania, *abjectus*, p. 143, *brevicornis*, p. 144, Australia, LEA, Tr. R. Soc. S. Austral. xxiii, n. spp.

Anoxyopisthen carbonatum, p. 130, *sejunctum*, p. 132, *aurivillianum*, p. 133, *conradti*, p. 135, Cameroons, KOLBE, Stettin. ent. Zeit. lx, n. spp.

Anthobaphus n. g. *Sympiezopini*, for *A. meyeri*, p. 19, *tricolor*, p. 20, n. spp., Madagascar, FAUST, Abh. Mus. Dresden, Festschrift, No. 2.

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A. arborator, *fabrile*, p. 339, *alternans*, p. 340, *weisei*, p. 341, E. Africa, FAUST, Deutsche ent. Zeitschr. 1899; *A. tenebricosum*, p. 432, *probum*, *crusculum*, p. 433, Congo, FAUST, Ann. Soc. ent. Belgique 1899; *A. biforme*, Madagascar, FAUST, p. 15, Abh. Mus. Dresden, Festschrift, No. 2; *A. gestroi*, p. 39, *infaustum*, *albopictum*, p. 40, New Guinea, FAUST, Ann. Mus. Genova xl; *A. pudicum*, *agonis*, p. 606, *amabile*, *condensatum*, p. 607, *æmulum*, *philanthum*, p. 608, *binotatum*, *congruum*, p. 609, *foveicolle*, *teretirostre*, p. 610, *fuscosuturale*, *integricolle*, p. 611, *carpophagum*, *immundum*, *solani*, p. 612, *anthidium*, p. 613, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii : n. spp.

Apoderus femoralis var. n. *semiruber*, FAUST, p. 15, Abh. Mus. Dresden, Festschrift, No. 2; *A. cerberus* var. n. *atrox*, FAUST, p. 435, Ann. Soc. ent. Belgique 1899.

A. nigricornis, *seminiger*, with var. *perfectus*, *rufinasus*, Congo, FAUST, t. c.; *A.* (*Haplopoderus*) *aculeatus*, Madagascar, FAUST, p. 14, Abh. Mus. Dresden, Festschrift, No. 2 : n. spp.

Arachnopus biguttatus, p. 98, *sectator*, p. 99, New Guinea, FAUST, Ann. Mus. Genova xl, n. sp.

Argoptochus strobli, Siebenbürgen, REITTER, p. 278, Deutsche ent. Zeitschr. 1899, n. sp.

Arthriticosoma n. g. near *Melanterius*, p. 202, for *A. vigilans*, n. sp., p. 203, Australia, LEA, P. Linn. Soc. N. S. Wales xxiv.

Asemus montanus, Java, HARTMANN, p. 19, Deutsche ent. Zeitschr. 1899, n. sp.

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Astyphlinus n. n. for *Astyphlus* Reitter (infra), REITTER, p. 162, Wien. ent. Zeit. 1899.

Astyphlus n. g. near *Orthochætes*, for *A. gracilitarsis*, n. sp., Ordubad, REITTER, p. 3, t. c.

Attelabus chalybæus, Transcaucasus, p. 72, *balcanicus*, Mt. Haemo, p. 73, DANIEL, Col. Stud. ii; *A. ruginotus*, Madagascar, FAIRMAIRE, p. 500, Ann. Soc. ent. France 1899 : n. spp.

Aulacocnemus n. g. *Tylodini*, p. 61, for *A. solitarius*, n. sp., New Guinea, p. 62, FAUST, Ann. Mus. Genova xl.

Auletes euphorbiæ Woll., queried as referable to *Minurus*, FAUST, p. 344, Deutsche ent. Zeitschr. 1899.

A. brevirostris, p. 620, *minor*, *eucalypti*, p. 621, *melaleucæ*, *pilosus*, p. 622,

insignis, *pallipes*, p. 623, *semicrudus*, p. 624, *densus*, p. 625, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii, n. spp.

Bagous crispus, Congo, FAUST, p. 408, Ann. Soc. ent. Belgique 1899; *B. interpositus*, *forsteri*, p. 49, *sulcicollis*, p. 50, China, HARTMANN, Wien. ent. Zeit. 1899 : n. spp.

Balaninorhynchus n. g. near *Balaninus*, for *B. strigicollis*, n. sp., Madagascar, FAIRMAIRE, p. 543, Ann. Soc. ent. Belgique 1899.

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B. fasciatus, E. Africa, FAUST, p. 330, Deutsche ent. Zeitschr. 1899; *B. albogriseus*, Madagascar, FAIRMAIRE, p. 544, Ann. Soc. ent. Belgique 1899 : n. spp.

Baridius cruentus, Congo, FAUST, p. 422, t. c. n. sp.

Barinogyna n. g. *Madarini*, for *B. ebenina*, n. sp., New Guinea, FAUST, p. 115, Ann. Mus. Genova xl.

Baris korbi, Spain, SCHULTZE, p. 383, Deutsche ent. Zeitschr. 1899; *B. elevata*, Spain, REITTER, p. 160, Wien. ent. Zeit. 1899; *B. subtilina*, Caucasus, REITTER, p. 208, Deutsche ent. Zeitschr. 1899; *B.* (*Ægyptobaris*, subg. n.), *arctithorax*, Egypt, PIC, p. 140, Miscell. ent. vii; *B. sedula*, Congo, FAUST, p. 423, Ann. Soc. ent. Belgique 1899; *B. kuchenbeisseri*, China, HARTMANN, p. 51, Wien. ent. Zeit. 1899 : n. spp.

Barynotus ? montandoni, Dobrudscha, PIC, p. 26, Bull. Soc. zool. France 1899, n. sp.

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Barystethus dispar varr. *basalis*, *rufus*, FAUST, p. 119, Ann. Mus. Genova xi, n. spp.

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Belus acaciæ, p. 594, *granulatus*, p. 595, *puncticeps*, p. 596, *vertebralis*, *tenuis*, p. 597, *rubicundus*, *longicornis*, p. 599, *edentulus*, p. 600, *pudicus*, p. 601, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii, n. spp.

Blosyrus incisus, *electus*, Congo, FAUST, p. 388, Ann. Soc. ent. Belgique 1899, n. spp.

Brachycerus normandi, Tunis, DESBROCHERS, p. 11, Frelon vii; *B. lacordairei*, Congo, FAUST, p. 401, Ann. Soc. ent. Belgique 1899 : n. spp.

Brachysomus rumelicus, *ponticus*, p. 800, *B.* (*Foucartia*) *serbicus*, p. 801, S. Europe, APFELBECK, Wiss. Mitt. Bosnien vi, n. spp.

Brachytemnus subasperatus, Talysch, REITTER, p. 14, Verh. Ver. Brunn xxxvii, n. sp.

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Calandrotopus n. g. *Calandrides vrais*, for *C. punctiger*, n. sp., Burma, FAUST, p. 26, Abh. Mus. Dresden, Festschrift, No. 2.

Camptorhinus amitinus, Congo, FAUST, p. 419, Ann. Soc. ent. Belgique 1899; *C. perrieri*, Madagascar, FAIRMAIRE, p. 497, Ann. Soc. ent. France 1899; *C. rubicundus*, Madagascar, FAUST, p. 17, Abh. Mus. Dresden, Festschrift, No. 2 : n. spp.

Cathormiocerus lapidicola, sexes, UHAGON, p. 56, Actas Soc. espan. 1899.

C. cancellatus, Tangier, DESBROCHERS, p. 78, Frelon vii, n. sp.

Centyres dolens, N. S. Wales, BLACKBURN, p. 89, Tr. R. Soc. S. Austral. xxiii, n. sp.

Ceuthorrhynchidius centrimacula, Algeria etc., SCHULTZE, p. 302, Deutsche ent. Zeitschr. 1899, n. sp.

Ceuthorrhynchus lineatus and *albolineatus*, characters, p. 185, *C. steveni*= (*pictus* Stierl.), p. 186, SCHULTZE, t. c.; *C. albolineatus*, note on, CSIKI, p. 250, Termes. Fuzetek xxii.

C. pictus, *poncyi*, Roumania, STIERLIN, p. 369, Bull. Soc. Bucarest viii; *C. pictus*, Bucharest, STIERLIN, p. 204, Mt. Schweiz. ent. Ges. x; *C. gerhardti*, Europe, p. 304, *makhabœus*, Jerusalem, p. 305, SCHULTZE, Deutsche ent. Zeitschr. 1899; *C. imbricatus*, Oran, p. 294, *schneideri*, Buchara, p. 296, *abeillei*, Biskra, p. 297, *malachiticus*, Algeria, *canescens*, Syria, p. 299, SCHULTZE, t. c.; *C. sexnotatus*, India, SCHULTZE, p. 190, t. c. : n. spp.

Chaunoderus duvivieri, Congo, FAUST, p. 395, Ann. Soc. ent. Belgique 1899, n. sp.

Chærodemas triimpressa, *sejuncta*, E. Africa, FAUST, p. 338, Deutsche ent. Zeitschr. 1899, n. spp.

Chærorhamphus n. g. *Celeuthetidini*, p. 24, for *C. setiger*, n. sp., New Guinea, p. 25, FAUST, Ann. Mus. Genova xl.

Choristorhinus n. g. near *Anchonus*, for *C. cribripennis*, n. sp., Madagascar, FAIRMAIRE, p. 23, Mem. Soc. zool. France xii.

Cimberis attelaboides var. n. *canescens*, SEMENOW, p. 129, Bull. Soc. Moscou 1899.

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C. costipennis, Slivno, SCHULTZE, p. 192, Deutsche ent. Zeitschr. 1899; *C. usambicus*, E. Africa, FAUST, p. 331, t. c. : n. spp.

Cirrorhynchus subg. n. of *Otiorrhynchus* for *O. plumipes* etc., APFELBECK, p. 777, Wiss. Mitt. Bosnien vi.

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Cœliodes subplagiatus, Algeria, DESBROCHERS, p. 31, Frelon vii, n. sp.

Conapion tschoffeni, *familiare*, p. 430, *bomaense*, *sparsum*, p. 431, Congo, FAUST, Ann. Soc. ent. Belgique 1899; *C. sculpturatum*, New Guinea, FAUST, p. 38, Ann. Mus. Genova xl : n. spp.

Conopisthen mucrosternale, Cameroons, KOLBE, p. 33, Stettin. ent. Zeit. lx, n. sp.

Coptopisthen n. g. *Oxyopistheninæ*, p. 95, for *C. exhaustum*, p. 99, *consobrinum*, p. 101, *separandum*, p. 102, *obtusatum*, p. 104, *amitinum*, p. 105, n. spp., Cameroons, KOLBE, t. c.

Coptorhynchus posticus, *indiscretus*, *discretus*, *distans*, p. 18, *hospes*, p. 19, *fraterculus*, p. 20, *pellax*, p. 21, New Guinea, FAUST, Ann. Mus. Genova xl, n. spp.

Coryssoglymma n. g. *Tylodini*, p. 66, for *C. odiosa*, p. 67, *enodata*, p. 68, n. spp., New Guinea, FAUST, t. c.

Cossonus hamiltoni, Florida, SLOSSON, p. 193, Canad. Ent. 1899; *C. hubbardi*, Arizona, SCHWARZ, p. 10, Psyche viii. Suppl. i : n. spp.

Cratopus perrieri, Madagascar, FAIRMAIRE, p. 491, Ann. Soc. ent. France 1899; *C. piciformis*, Madagascar, FAIRMAIRE, p. 24, Mem. Soc. zool. France xii : n. spp.

Cubicorhynchus tortipes, *angularis*, *bohemanni*, synonymy, BLACKBURN, p. 88, Tr. R. Soc. S. Austral. xxiii.

Cybebus rufus, *nigritarsis*, Madagascar, FAUST, p. 14, Abh. Mus. Dresden, Festschrift, No. 2, n. spp.

Cyclomaurus græcus, Greece, STIERLIN, p. 200, Mt. Schweiz. ent. Ges. x, n. sp.

Cycloteres sulcostriatus, Madagascar, FAIRMAIRE, p. 541, Ann. Soc. ent. Belgique 1899, n. sp.

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p. 148, *hakeæ*, *modesta*, p. 149, *grisea*, *brevicornis*, *eucalypti*, p. 150, *nymphoides*, p. 151, Australia, LEA, Tr. R. Soc. S. Austral. xxiii, n. spp.

Cylas compressus, Usambara, HARTMANN, p. 22, Deutsche ent. Zeitschr. 1899; *C. rufescens*, Madagascar, FAIRMAIRE, p. 501, Ann. Soc. ent. France 1899 : n. spp.

Cylindrorrhinus confusaneus, Tierra del Fuego, BERG, Comun. Mus. Buenos Aires i, p. 61, n. sp.

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Cyrtotrachelus bipartitus, Java, HARTMANN, p. 29, Deutsche ent. Zeitschr. 1899, n. sp.

Cyttalia impura, parva, p. 190, *nigriclava*, *inornata*, *maculata*, p. 191, *acaciæ*, *nigra*, *rufipes*, p. 192, Australia, LEA, Tr. R. Soc. S. Austral. xxiii, n. spp.

Degis castaneus, New Guinea, FAUST, p. 109, Ann. Mus. Genova xi, n. sp.

Deporaus punctatissimus, Caucasus, REITTER, p. 306, Ent. Nachr. xxv, n. sp.

Deretiosus verrucifer, New Guinea, FAUST, p. 52, Ann. Mus. Genova xl, n. sp.

Stigmatrachelus (as *Dermatodes* but emended on added slip) *collaris*, Madagascar, FAUST, p. 4, Abh. Mus. Dresden, Festschrift, No. 2, n. sp.

Desiantha malevolens, *vegrandis*, p. 138, *præmorsa*, p. 139, *irrasa*, p. 140, *mecaspis*, *incontaminata*, p. 141, Australia, LEA, Tr. R. Soc. S. Austral. xxiii, n. spp.

Desmidophorus hovanus, Madagascar, FAUST, p. 16, Abh. Mus. Dresden, Festschrift, No. 2; *D. obliquefasciatus*, Sumatra, Ceylon, HARTMANN, p. 26, Deutsche ent. Zeitschr. 1899 : n. spp.

Diathetes? signaticollis, New Guinea, FAUST, p. 120, Ann. Mus. Genova xl, n. sp.

Dicasticus hæmorrhoidalis, E. Africa, FAUST, p. 325, Deutsche ent. Zeitschr. 1899, n. sp.

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Diœdimorpha depressicollis, New Guinea, FAUST, p. 124, Ann. Mus. Genova xl, n. sp.

Dolichopisthen n. g. *Oxyopistheninæ* for *Ichthyopisthen convexicolle* and *togoense*, KOLBE, p. 89, Stettin. ent. Zeit. lx.

Dryophthorus tricuspis, New Guinea, FAUST, p. 122, Ann. Mus. Genova xl, n. sp.

Dyspeithes suspiciosus, New Guinea, FAUST, p. 54, Ann. Mus. Genova xl, n. sp.

Echinocnemus nereis, Madagascar, FAUST, p. 13, Abh. Mus. Dresden, Festschrift, No. 2, n. sp.

Ecrizothis n. g. *Leptopsides*, p. 87, for *E. inæqualis*, n. sp., Victoria, p. 88, BLACKBURN, Tr. R. Soc. S. Austral. xxiii.

Ectatocyba n. g. *Tylodini*, p. 59, for *E. tuberosa*, n. sp., New Guinea, p. 60, FAUST, Ann. Mus. Genova xl.

Ectemnomerus viridanus, *nigroplagiatus*, p. 23, *pertusicollis*, p. 24, New Guinea, FAUST, t. c. n. spp.

Elassophilus n. g. *Sphadasmini*, p. 102, for *E. albopictus*, n. sp., New Guinea, p. 103, FAUST, t. c.

Ellimenistes mysticus, E. Africa, FAUST, p. 326, Deutsche ent. Zeitschr. 1899, n. sp.

Elytrocheilus expansus var. n. *nigripes*, FAUST, p. 16, Ann. Mus. Genova xl.

E. proximus, *crassicornis*, p. 14, *rufipes*, p. 15, *ruficollis*, p. 16, FAUST, t. c. n. spp.
Embrithes lateritius, Congo, FAUST, p. 400, Ann. Soc. ent. Belgique 1899, n. sp.
Emplesis merged in *Storeus*, LEA, p. 160, Tr. R. Soc. S. Austral. xxiii
Enide merged in *Lybæba*, LEA, p. 250, P. Linn. Soc. N. S. Wales xxiv.
Epicœrus imbricatus, natural history, CHITTENDEN, pp. 62–67, fig. 14, Bull. U. S. Dep. Agric. ent. No. 19.
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Eremnus honestus, p. 5, *longicornis*, *rusticanus*, *rufitarsis*, *cristicollis*, *humilis*, p. 6, *verecundus*, p. 7, Madagascar, FAUST, t. c. n. spp.
Eremotes patagiatus, Caucasus, REITTER, p. 13, Verh. Ver. Brunn xxxvii, n. sp.
Eudipnoidius subg. n., cf. *Eudipnus*.
Eugnoristus rectelineatus, Madagascar, FAIRMAIRE, p. 500, Ann. Soc. ent. France 1899, n. sp.
Eudipnus (*Eudipnoidius* subg. n.) *sciaphiliformis*, Bulgaria, APFELBECK, p. 795, Wiss. Mitt. Bosnien vi, n. sp.
Euops janthinus, Madagascar, FAIRMAIRE, p. 545, Ann. Soc. ent. Belgique 1899; *E. suturalis*, p. 617, *strigiventris*, *corrugata*, p. 618, *puncticollis*, p. 619, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii : n. spp.
Eupholus bennettii var. n. *bicolor*, *cinnamomeus* var. n. *cœsius*, FAUST, p. 12, Ann. Mus. Genova xl.
Eupiona conicollis, Congo, FAUST, p. 400, Ann. Soc. ent. Belgique 1899; *E. celata*, E. Africa, FAUST, p. 328, Deutsche ent. Zeitschr. : n. spp.
Eusomus ovulum = (*beckeri* Tourn.), APFELBECK, p. 774, Wiss. Mitt. Bosnien vi.
Faustiella trifasciata, Madagascar, FAUST, p. 21, Abh. Mus. Dresden, Festschrift, No. 2, n. sp.
Foucartia osmanlis, Turkey, REITTER, p. 272, Deutsche ent. Zeitschr. 1899, n. sp.
Glaucopela rufa, p. 193, *instabilis*, p. 194, W. Australia, LEA, Tr. R. Soc. S. Austral. xxiii, n. spp.
Gonocleonus scabrithorax, Biskra, DESBROCHERS, p. 14, Frelon vii, n. sp.
Guiomatus n. g. *Piazurini*, p. 100, for *G. quadrinodosus*, n. sp., New Guinea, p. 101, FAUST, Ann. Mus. Genova xl.
Gymnetron semirufum, *interpositum*, Algeria, DESBROCHERS, p. 29, Frelon vii, n. spp.
Gymnetron semirubrum, *G.* (*Aprinus*) *palæstinum*, Syria, PIC, p. 141, Miscell. ent. vii, n. spp.
Haplorrhynchus præcox, p. 53, *zenkeri*, p. 55, *mimicus*, p. 57, *conradti*, p. 64, *dissidens*, p. 66, *bipindinus*, p. 67, *aurivillianus*, p. 68, *preussi*, p 69, *camerunus*, p. 70, *propinquus*, p. 72, *lolous*, p. 73, *patruelis*, p. 75, Trop. Africa, KOLBE, Stettin. ent. Zeit. lx, n. spp.
Heteronus n. g. near *Campyloscelis*, p. 498, for *H. fasciolatus*, *quadricollis*, p. 499, n. spp., Madagascar, FAIRMAIRE, Ann. Soc. ent. France 1899.
Holcorhinus parvus, Marocco, STIERLIN, p. 200, Mt. Schweiz. ent. Ges. x, n. sp.
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Homœopus n. n. for *Isopus*, Faust nec Montr., BERG, Comun. Mus. Buenos Aires i, p. 79.
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Hypera knauthi, Dalmatia, MÜLLER, p. 144, Deutsche ent. Zeitschr. 1899; *H. ophthalmica*, Tangier, DETBROCHERS, p. 13, Frelon vii : n. spp.

Hypolixus n. g. type *nebulosus* Boh., p. 54, with *H. distinguendus*, Egypt, p. 58, *turkestanicus*, p. 59, *fariniferus*, p. 60, *bivirgatus*, p. 61, Turkestan, *serripes*, Tunis, p. 62, n. spp., DESBROCHERS, Frelon vii.

Hyponotus africanus, Congo, FAUST, p. 429, Ann. Soc. ent. Belgique 1899, n. sp.

Ichthyopisthen acutum, W. Africa, KOLBE, p. 117, Stettin ent. Zeit. lx, n. sp.

Idiopsis maculosa, p. 26, *excellens*, p. 27, New Guinea, FAUST, Ann. Mus. Genova xl, n. spp.

Idotasia densata, p. 84, *difficilis*, *morokensis*, p. 85, *cribrata*, p. 86, *illex*, p. 87, *solida*, *pusilla*, p. 88, *illita*, p. 89, *gibbirostris*, *cuneata*, p. 91, *sellata*, p. 92, *ephippiata*, *polita*, p. 93, *obnixa*, p. 94, *vana*, *sejuncta*, p. 95, *neglecta*, *melas*, p. 96, *seclusa*, p. 97, New Guinea, FAUST, t. c. n. spp.

Imathia brevis, New Guinea, FAUST, p. 51, t. c. n. sp.

Ischnotrachelus vicinus, Congo, FAUST, p. 393, Ann. Soc. ent. Belgique 1899, n. sp.

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Isotocerus fallax, p. 69, *setiger*, p. 70, FAUST, Ann. Mus. Genova xl, n. spp.

Konigius subg. n. of *Cleonus*, q. v.

Læmosaccus bilobus, p. 626, *rivularis*, p. 627, *frater*, *variegatus*, p. 628, *brevis*, p. 629, *judaicus*, p. 630, *melanocephalus*, p. 631, Australia, LEA, P. Linn. Soc. N. S. Wales xxiii, n. spp.

Lagenotenes n. g. *Brachyderini*, p. 2, for *L. quinquepunctatus*, n. sp., Madagascar, p. 3, FAUST, Abh. Mus. Dresden, Festschrift, No. 2.

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L. madagassus, Madagascar, FAUST, p. 8, Abh. Mus. Dresden, Festschrift, No. 2, n. sp.

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L. candezei, Congo, id. l. c. n. sp.

Leucomigus antennalis, India, DESBROCHERS, p. 112, Ind. Mus. Notes iv, n. sp.

Lithinus hovanus, p. 11, *sonticus*, *nodifer*, p. 13, Madagascar, FAUST, Abh. Mus. Dresden, Festschrift, No. 2, n. spp.

Litorhynchus ursinus, New Guinea, FAUST, p. 117, Ann. Mus. Genova xl, n. sp.

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Lobotrachelus argenteolus, E. Africa, FAUST, p. 337, Deutsche ent. Zeitschr. 1899, n. sp.

Lybœba consanguinea, p. 254, *parvicollis*, p. 255, *acutidens*, p. 256, *concinna*, p. 257, *inæqualis*, p. 258, *nigrovaria*, p. 259, *famelica*, p. 260, *picta*, p. 261, *mollis*, p. 262, *tantilla*, p. 263, *majorina*, p. 264, Australia, LEA, P. Linn. Soc. N. S. Wales xxiv, n. spp.

Magdalinus angustatus, Bucharest, STIERLIN, p. 126, Bull. Soc. Bucarest viii, and p. 203, Mt. Schweiz. ent. Ges. x, n. sp.

Mascarauxia n. g. *Erirhinides*, p. 52, for *M. cyrtica*, n. sp., Dax, p. 53, DESBROCHERS, Frelon vii.

Mataxus n. g. near *Cryptorhynchus*, for *M. terrulentus*, p. 495, *cavernosus*, *perrieri*, p. 496, n. spp., Madagascar, FAIRMAIRE, Ann. Soc. ent. France 1899.

Mechistocerus lemniscatus, Madagascar, FAUST, p. 16, Abh. Mus. Dresden, Festschrift, No. 2, n. sp.

Mecopus phthisicus, Queensland, LEA, p. 632, P. Linn. Soc. N. S. Wales xxiii, n. sp.

Megarhinus longicollis, Congo, FAUST, p. 408, Ann. Soc. ent. Belgique 1899, n. sp.

Megastethus n. g. *Sphenophorini*, for *M. lacordairei*, n. sp., Congo, FAUST, p. 426, Ann. Soc. ent. Belgique 1899.

Meira pygmæa, Styria, STIERLIN, p. 199, Mt. Schweiz. ent. Ges. x, n. sp.

Melanteriosoma n. g. for *M. costatum*, p. 267, *inconspicuum*, p. 268, n. spp., Australia, LEA, P. Linn. Soc. N. S. Wales xxiv.

Melanterius bidentatus, p. 212, *porosus*, p. 213, *ventralis*, p. 214, *strabonus*, p. 217, *acaciæ*, p. 221, *maculatus*, p. 222, *interstitialis*, p. 224, *parvidens*, p. 225, *antennalis*, p. 226, *adipatus*, p. 227, *castaneus*, p. 229, *tristis*, p. 230, *aberrans*, p. 233, *solitus*, p. 234, *impolitus*, p. 235, *tenuis*, p. 236, *cordipennis*, *unidentatus*, p. 237, *vulgivagus*, p. 238, *pectoralis*, p. 239, *compactus*, p. 241, *incomptus*, p. 242, *congruus*, p. 243, *amplipennis*, p. 244, *uniseriatus*, p. 245, Australia, LEA, t. c. n. spp.

Meroleptus tuberculosus, New Guinea, FAUST, p. 64, Ann. Mus. Genova xl, n. sp.

Metatyges parvus, Congo, FAUST, p. 416, Ann. Soc. ent. Belgique 1899, n. sp.

Microspathe n. g. *Calandrini*, for *C. fuliginosa* Pasc., FAUST, p. 122, Ann. Mus. Genova xl.

Micrelus bipustulatus, p. 181, *cruciatus*, p. 182, *usambaricus*, p. 183, E. Africa, SCHULTZE, Deutsche ent. Zeitschr. 1899, n. spp.

Minurus? hortulanus, Africa, FAUST, p. 343, Deutsche ent. Zeitschr. 1899, n. sp.

Minyops subæqualis, Erzeroum, p. 219, *escherichi*, Brussa, p. 220, REITTER, Ent. Nachr. xxv, n. spp.

Misophrice alternata, p. 153, *squamibunda*, p. 154, *viridisquama*, *vitiata*, p. 155, *cylindrica*, p. 156, *nigriventris*, *clathrata*, *dissentanea*, p. 157, *fenestrata*, p. 158, Australia, LEA, Tr. R. Soc. S. Austral. xxiii, n. spp.

Mononychus angustus, Marocco, SCHULTZE, p. 301, Deutsche ent. Zeitschr. 1899, n. sp.

Mylacus bifoveolatus, Schuler Mts., STIERLIN, p. 199, Mt. Schweiz. ent. Ges. x; *M. syriacus*, Akbès, PIC, p. 124, Bull. Soc. Autun xi, 2 : n. spp.

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M. maculosus, *setulifer*, India, DESBROCHERS, p. 111, Ind. Mus. Notes iv, n. spp.

Myositta carpophaga, p. 194, *apionomorpha*, p. 195, *banksiæ*, p. 196, Australia, LEA, Tr. R. Soc. S. Austral. xxiii, n. spp.

Myrmacicelus puerulus, W. Australia, LEA, p. 606, P. Linn. Soc. N. S. Wales xxiii, n. sp.

Myrmecolixus n. g. *Cossonini*, p. 170, for *M. braunsi*, n. sp., Cape G. H., p. 171, pl. ii, fig. 7, WASMANN, Deutsche ent. Zeitschr. 1899.

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Nanophyes pilipennis, Congo, FAUST, p. 429, Ann. Soc. ent. Belgique 1899, n. sp.

Nechyrus humeralis, p. 77, *concussus*, p. 79, New Guinea, FAUST, Ann. Mus. Genova xl, n. spp.

Neiphagus weisei, E. Africa, FAUST, p. 333, Deutsche ent. Zeitschr. 1899;

N. æquatorialis, p. 417, *tschoffeni*, p. 418, Congo, FAUST, Ann. Soc. ent. Belgique 1899 : n. spp.

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Neocalandra n. g. *Calandrini*, for *N. obsoleta*, p. 22, *arguta*, p. 23, n. spp., Madagascar, FAUST, Abh. Mus. Dresden, Festschrift, No. 2.

Neomelanterius, n. g., p. 247, for *Mel. carinicollis* Pasc., and *N. longirostris*, n. sp., Queensland, p. 248, LEA, P. Linn. Soc. N. S. Wales xxiv.

Neoporopterus n. g. type *varicosus* Pasc., FAUST, p. 57, Ann. Mus. Genova xl.

Nerthops perelegans, Madagascar, FAIRMAIRE, p. 498, Ann. Soc. ent. France 1899, n. sp.

Niphades interruptus, New Guinea, FAUST, p. 34, Ann. Mus. Genova xl, n. sp.

Ochtarthrum fossulatum, East Africa, FAUST, p. 321, Deutsche ent. Zeitschr. 1899, n. sp.

Ocladius bufo, Tunis, VAULOGER, p. 405, Bull. Soc. ent. France 1899; *O. senex*, Congo, FAUST, p. 418, Ann. Soc. ent. Belgique 1899; *O. perrieri*, p. 542, *granosus*, p. 543, Madagascar, FAIRMAIRE, t. c. : n. spp.

Ochronanus vicinus, p. 125, *subreflexus*, p. 126, New Guinea, FAUST, Ann. Mus. Genova xl, n. spp.

Odosyllis opposita, New Guinea, FAUST, p. 80, t. c. n. sp.

Œnochroma triquetra, Richmond river, LEA, p. 152, Tr. R. Soc. S. Austral. xxiii, n. sp.

Omotemnus cinctus var. n. *nigrosignatus*, HARTMANN, p. 31, Deutsche ent. Zeitschr. 1899.

O. vitticollis, Java, id., l. c. n. sp.

Opseotrophus seidlitzi, E. Africa, FAUST, p. 327, Deutsche ent. Zeitschr. 1899, n. sp.

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Orthomycterus n. g. *Strangaliodini*, p. 7, for *O. cœrulipes*, n. sp., Madagascar, p. 8, FAUST, Abh. Mus. Dresden, Festschrift, No. 2.

Orthorhinus illex, New Guinea, FAUST, p. 37, Ann. Mus. Genova xl, n. sp.

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Otiorrhynchus; synonymy of European, APFELBECK, p. 774, Wiss. Mitt. Bosnien vi; *O.*, synonymical and critical notes; *hadrocerus* n. n. for *validicornis* Dan. nec Fald. p. 50, DANIEL, Col. Stud. ii; *O. vastus* var. n. *lionensis*, p. 778, *dives* var. n., *demirkapensis*, p. 784, APFELBECK, Wiss. Mitt. Bosnien vi; *O. strigirostris* var. n., *calous*, FIORI, p. 163, Atti Soc. Modena xxxi; *O. orologus* n. n. for *tenuis* Stierl. (infra), HEYDEN, p. 176, Ent. Nachr. xxv; *O. mocsaryi* n. n. for *O. montigena* Friv., CSIKI, p. 247, Termes. Fuzetek xxii.

O. impressicollis, France, p. 197, *paganettii*, Dalmatia, *tenuis* Vilebit Mts., p. 198, STIERLIN, Mt. Schweiz. ent. Ges. x; *O. meledanus*, Dalmatia, REITTER, p. 288, Deutsche ent. Zeitschr. 1899; *O. aratus*, p. 37, *cosmopterus*, p. 38, Transsylvania, *echidna*, p. 43, *coniceps*, p. 44, *sulcatellus*, *articulatus*, p. 45, Italy, *gredleri*, Tyrol, p. 46, *planiceps*, p. 47, *porcellus*, p. 48, Italy, DANIEL, Col. Stud. ii; *O.* (*Troglorrhynchus*) *hummleri*, Italy, FLACH, p. 245, Wien. ent. Zeit. 1899; *O.* (*Tournieria*) *bettinii*, Italy, FIORI, p. 109, Atti Soc. Modena xxxii; *O. capricornis*, p. 777, *dinaricus*, p. 779, *bulgaricus*, p. 781, *verrucipes*, p. 782, *etropolensis*, p. 783, O. (*Tournieria*) *illustris*, p. 786, *euxinus*, p. 787, *abietinus*, p. 788, Balkan penins., APFELBECK, Wiss. Mitt. Bosnien vi; *O. bleusei*, Rhodes, FAUST, p. 173, Wien. ent. Zeit. 1899; *O. delatus*, Madagascar, FAUST, p. 4, Abh. Mus. Dresden, Festschrift, No. 2 : n. spp.

Ottistira viridis, p. 30, *læta*, p. 31, *nitida*, p. 32, *sulcicollis*, p. 33, New Guinea, FAUST, Ann. Mus. Genova xl, n. spp.

Oxymelus n. g. *Cryptorhynchini* near *Achopera*, for *O. concretus* n. sp., New Guinea, FAUST, p. 74, t. c.

Oxyonyx beryticus, Beyrout, p. 289, *crassipes*, Algeria, p. 290, *japhoensis*, p. 291, *syriacus*, p. 292, Syria, SCHULTZE, Deutsche ent. Zeitschr. 1899, n. spp.

Oxyopisthen and allies to be a new Group, KOLBE, p. 3, characters, pp. 5–9, Stettin. ent. Zeit. lx.

Pachyrrhynchus mollendorffi, Philippines, HELLER, p. 5, Abh. Mus. Dresden vii, No. 8, n. sp.

Pachytychius obsoletus, Oran, DESBROCHERS, p. 18, Frelon vii, n. sp.

Pachyura albicollis, Australia, LEA, p. 603, P. Linn. Soc. N. S. Wales xxiii, n. sp.

Panoptidius n. g. *Zygopini*, for *P. rufipes*, n. sp., Madagascar, FAUST, p. 17, Abh. Mus. Dresden, Festschrift, No. 2.

P. pauli, p. 335, *meleagris*, p. 336, E. Africa, FAUST, Deutsche ent. Zeitschr. 1899, n. spp.

Pantorhytes proximus, *opacus*, New Guinea, FAUST, p. 29, Ann. Mus. Genova xl, n. spp.

Peloropus Sch., characters, FAUST, p. 420, Ann. Soc. ent. Belgique 1899.

Phænomerus striga, Madagascar, FAUST, p. 22, Abh. Mus. Dresden, Festschrift, No. 2, n. sp.

Philophlœus n. g. *Hylobiini*, for *P. nodifer*, n. sp., Madagascar, FAUST, t. c. p. 9.

Pholicodes tunisiensis, N. Africa, DESBROCHERS, p. 80, Frelon vii; *P. viridescens*, Syria, REITTER, p. 280, Deutsche ent. Zeitschr. 1899 : n. spp.

Pholidonotus pilosus, New Guinea, FAUST, p. 123, Ann. Mus. Genova xl, n. sp.

Phyllobius synonymy of numerous European, APFELBECK, p. 774, Wiss. Mitt. Bosnien vi; *P. pictus*, var. n. *rhodosicus*, FAUST, p. 174, Wien. ent. Zeit. 1899.

P. sutorinensis, p. 791, *rhodopensis*, p. 793, Balkan penins., APFELBECK, Wiss. Mitt. Bosnien vi, n. spp.

Phytobius muricatus, *quadrinodosus*, synonymy, CHAMPION, p. 144, Ent. Mag. 1899.

Piezocnemus carinthiacus, Carinthia, DANIEL, p. 68, Col. Stud. ii, n. sp.

Piezotrachelus illex, Congo, FAUST, p. 434, Ann. Soc. ent. Belgique 1899; *P. colonus*, E. Africa, FAUST, p. 342, Deutsche ent. Zeitschr. 1899 : n. spp.

Pissodes validirostris not distinct from *notatus*, MACDOUGALL, pp. 65–69, P. Phys. Soc. Edinb. xiv.

P. irroratus, Kamtschatka, REITTER, p. 208, Deutsche ent. Zeitschr. 1899, n. sp.

Platytarsus fasciatus, Dalmatia, STIERLIN, p. 201, Mt. Schweiz. ent. Ges. x, n. sp.

Plinthus griseus a valid species, characters, REITTER, p. 52, Wien. ent. Zeit. 1899.

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Proictes humilis, p. 1, *tessellatus*, *lateralis*, p. 2, Madagascar, FAUST, Abh. Mus. Dresden, Festschrift, No. 2, n. spp.

Prosoestus n. g. *Derelomini*, for *P. sculptilis*, n. sp., Congo, FAUST, p. 409, Ann. Soc. ent. Belgique 1899.

P. furcatus, E. Africa, FAUST, p. 332, Deutsche ent. Zeitschr. 1899, n. sp.
Pseudolignyodes n. g. near *Lignyodes*, for *P. apeltariiformis*, n. sp., Syria, PIC, p. 140, Miscell. ent. vii.
Pseudoporopterus characters, FAUST, p. 55, Ann. Mus. Genova xl.
P. leai, p. 55, *sulcicollis*, p. 58, New Guinea, id. t. c. n. spp.
Pseudostoreus n. g. near *Melanterius*, p. 269, for *P. placitus* n. sp., Australia, p. 270, LEA, P. Linn. Soc. N. S. Wales xxiv.
Ptochus viridilimbatus, S. E. Europe, APFELBECK, p. 789, Wiss. Mitt. Bosnien vi, n. sp.
Ptyctonotus n. g. *Madapterini*, for *P. gibbus*, n. sp., New Guinea, FAUST, Ann. Mus. Genova xl.
Pyroderes n. g. *Cryptorhynchini* near *Pantoxystus*, for *P. violaceipes*, n. sp., New Guinea, FAUST, p. 81, t. c.
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Rhinomias pyrorhinus, Transylvania, DANIEL, p. 69, Col. Stud. ii, n. sp.
Rhinoncus guttalis var. = (*rubricus*), PIC, p. 116, Miscell. ent. vii.
Rhinoscapha pulicaria, Allor, Timor, HARTMANN, p. 20, Deutsche ent. Zeitschr. 1899; *R. albaria*, p. 8, *gestroi*, p. 9, *loriai*, p. 10, New Guinea, FAUST, Ann. Mus. Genova xl : n. spp.
Rhitirhynus inæqualicollis, Egypt, DESBROCHERS, p. 12, Frelon vii, n. sp.
Rhynchites sanguinicollis, E. Africa, FAUST, p. 343, Deutsche ent. Zeitschr. 1899; *R. kawiensis*, Java, p. 23, *wahnesi*, Borneo, p. 24, HARTMANN, t. c. : n. spp.
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[*Cf.* REITTER (981), SCHWARZ (1039).]

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Neodorcadion heros, p. 237, *princeps*, p. 239, *consentaneum*, p. 241, Mongolia, JAKOWLEW, Annuaire Mus. St. Petersb. 1899, n. spp.

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Pseudoprionus subg. n. of *Polyarthron*, PIC, p. 27, Longicornes, Cah. 2.

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BRUCHIDÆ.

[*Cf.* FAIRMAIRE (402), LEA (745), PIC (926).]

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CHRYSOMELIDÆ.

[*Cf.* BLACKBURN (106, 107), CHOBAUT (215), DANIEL (268), DESBROCHERS (274), DONCKIER (305), FAIRMAIRE (352, 354, 402), GESTRO (465–469), JACOBSON (587, 590), JACOBY (593–597), H. J. KOLBE (671), W. KOLBE (675), KRAATZ (714), KRAUSS (722), LEA (745), PÉRINGUEY (889), PIC (919), SPAETH (1107), WEISE (1221–1223).]

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Asphalesia subg. n. of *Laccoptera*, for *A. confragosa*, n. sp., E. Africa, WEISE, p. 247, Arch. Naturg. lxv.
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A. capitata, Sumatra, id., l. c. n. sp.
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Neodiaphanops n. g. *Sagrides*, for *N. froggatti*, n. sp., N. W. Australia, BLACKBURN, p. 95, Tr. R. Soc. S. Austral. xxiii.
Niasia cœruleipennis, Sumatra, JACOBY, p. 295, pl. fig. 6, Ent. Zeit. Stettin lx, n. sp.
Nisotra ovatipennis, p. 352, *costatipennis*, *unifasciata*, p. 353, *uniforma*, p. 354, *apicalis*, *congoensis*, p. 355, W. Africa, JACOBY, P. Zool. Soc. London 1899, n. spp.
Nodina fulvicollis, Sumatra, JACOBY, p. 267, Ent. Zeit. Stettin lx, n. sp.
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O. rugicollis, p. 342, pl. xxi, fig. 1, *sulcicollis*, p. 343, W. Africa, JACOBY, t. c. n. spp.
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Ozomena dohrni, p. 286, *viridipennis*, *intermedia*, p. 287, Sumatra, JACOBY, Ent. Zeit. Stettin lx, n. spp.

Pachnephorus bretinghami=(*plagiatus* Jac.), JACOBY, p. 313, t. c.

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Pœcilaspis planipennis, Argentinia, SPAETH, p. 215, Verh. Ges. Wien 1899, n. sp.

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Porphyraspis klenei, Ecuador, SPAETH, p. 213, Verh. Ges. Wien 1899, n. sp.

Prionispa; table, GESTRO, pp. 224–226, Ann. Mus. Genova xl.

P. inermis, Burma, id. p. 224, t. c. n. sp.

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Sastra apicicornis, Sumatra, JACOBY, p. 220, pl. fig. 14, Ent. Zeit. Stettin lx, n. sp.
Sastracella n. g. near *Sastra*, p. 294, for *S. sumatrana*, n. sp., Sumatra, p. 295, JACOBY, t. c.
Sastroides crassipalpis, p. 292, *fuscipennis*, p. 294, Sumatra, JACOBY, t. c. n. spp.
Scolochrus multicolor, Paraguay, JACOBY, p. 177, Ann. Mus. Genova xl, n. sp.
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Sphærometopa obsoleta, 4-*punctata*, *intermedia*, referred to *Acrocrypta*, JACOBY, p. 313, t. c.
Syphaxia maculata, Peru, JACOBY, p. 273, Entomologist 1899, n. sp.
Systena c-nigrum, Paraguay, JACOBY, p. 187, Ann. Mus. Genova xl, n. sp.
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Thlaspida n. g. near *Coptocycla*, p. 272, for *T. tristis*, Sumatra, *biramosa*, China, p. 273, n. spp., and *C. cribrosa* Boh., WEISE, Arch. Naturg. lxv.
Trachymetopa n. g. near *Aphthona*, p. 139, for *T. cretica*, n. sp., Crete, p. 140, WEISE, Deutsche ent. Zeitschr. 1899.
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Trymnes Weise=(*Jamesonia*=*Gabonia* Jac.), characters, JACOBY, p. 348, P. Zool. Soc. London 1899.
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EROTYLIDÆ (incl. LANGURIIDÆ).

[*Cf.* GANGLBAUER (458), KRAATZ (690, 711, 715).]

Anadastus puncticollis, Sumatra, KRAATZ, p. 219, Ann. Soc. ent. Belgique 1899, n. sp.
Cosmolanguria n. g. for *C. ruficollis*, n. sp., India, KRAATZ, p. 351, Deutsche ent. Zeitschr. 1899.
Cyrtotriplax bipustulata varr., CSIKI, p. 249, Termes. Fuzetek xxii.
Doubledaya viator, variation, KRAATZ, p. 351, Deutsche ent. Zeitschr. 1899.
Ischnolanguria n. g. for *I. concolor*, *conradti*, n. spp., Cameroons, KRAATZ, t. c. p. 308.
Languria dolens, *spectabilis*, p. 309, *gracilior*, *acuminipennis*, *macilenta*, p. 310, Cameroons, KRAATZ, t. c.; *L. pallipes*, Sumatra, KRAATZ, p. 218, Ann. Soc. ent. Belgique 1899 : n. spp.
Pachylanguria metasternalis and *potatoria* distinguished, p. 345, *P. collaris*=(*punctata* Har.), p. 346, KRAATZ, Deutsche ent. Zeitschr. 1899.

P. speyeri, Borneo, KRAATZ, p. 346, t. c. n. sp.
Penolanguria nigerrima, p. 314, *callosipennis*, *monacha*, p. 315, Cameroons, KRAATZ, t. c. n. spp.
Platycladoxena n. g. for *P. castanea*, Cameroons, p. 312, *javanica*, Java, *sumatrana*, Sumatra, *borneensis*, Borneo, p. 313, n. spp., KRAATZ, t. c.
Tetralanguria tripunctata and *elongata* distinguished, KRAATZ, p. 347, t. c.
T. crucicollis, *variventris*, p. 348, *tumidicollis*, p. 349, *opaca*, *impressicollis*, p. 350, India, KRAATZ, t. c. n. spp.
Thallis scapulata, Madagascar, FAIRMAIRE, p. 517, Ann. Soc. ent. Belgique 1899, n. sp.
Triplax ustulata var. n. *diffusa*, FAIRMAIRE, p. 516, t. c.
T. scutellaris, *lugubrina*, p. 516, *pectoralis*, p. 517, Madagascar, FAIRMAIRE, t. c. n. spp.

ENDOMYCHIDÆ.

[*Cf.* FAIRMAIRE (354), CSIKI (260), GANGLBAUER (458).]

Encymon armipes, Madagascar, FAIRMAIRE, p. 469, Ann. Soc. ent. France 1899, n. sp.
Saula biroi, Malacca, CSIKI, p. 478, Termes. Fuzetek xxii, n. sp.
Sphærosoma fiorii, Modena, GANGLBAUER, p. 917, Käf. Mitteleur. iii, n. sp.

COCCINELLIDÆ.

[*Cf.* BERG (82), CASEY (198), GANGLBAUER (458), HUBBARD (578), WEISE (1220, 1224, 1225).]

The classification of *Coccinellidæ*, with table of the tribes, and revision of N. American forms, CASEY, J. N. York Ent. Soc. vii.
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Numerous brief notes on natural history by HACKER in Illustr. Zeitschr. Ent. iv.
Adalia ovipennis, *transversalis*, *ornatella*, N. America, CASEY, p. 86, J. N. York ent. Soc. vii, n. spp.
Agrabia n. g. for *cyanoptera* Muls., CASEY, p. 87, t. c.
Anatis lecontei, New Mexico, CASEY, p. 98, t. c. n. sp.
Anisocalvia victoriana, p. 96, *elliptica*, p. 97, N. America, CASEY, t. c. n. spp.
Axion alutaceum, New Mexico, CASEY, p. 106, t. c. n. sp.
Brachyacantha stellata, *congruens*, p. 117, *testudo*, *illustris*, p. 118, *pacifica*, *decora*, *socialis*, p. 119, N. America, CASEY, t. c. n. spp.
Bulæa bocandei, characters, WEISE, p. 62, Arch. Naturg. lxv.
Cheilomenes orbicularis, Liberia, CASEY, p. 163, J. N. York Ent. Soc. vii, n. sp.
Chilocorus cooki, Liberia, CASEY, p. 165, t. c.; *C. solitus*, Mozambique, WEISE, p. 62, Arch. Naturg. lxv; *C. orbus*, *confusor*, N. America, CASEY, p. 105, J. N. York Ent. Soc. vii : n. spp.
Chilomenes biguttata, E. Africa, WEISE, p. 62, Arch. Naturg. lxv, n. sp.
Chnootriba curriei, Liberia, CASEY, p. 164, J. N. York Ent. Soc. vii, n. sp.
Cleis minor, p. 95, *hudsonica*, p. 96, N. America, CASEY, t. c. n. spp.
Cleothera semicincta, Peru, WEISE, p. 270, Deutsche ent. Zeitschr. 1899, n. sp.
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CASEY, J. N. York Ent. Soc. vii; *C. duplaris*, Tierra del Fuego, BERG, Comun. Mus. Buenos Aires i, p. 65 : n. spp.

Cranophorus trapezium, *parvulus*, S. Africa, CASEY, p. 167, J. N. York Ent. Soc. vii, n. spp.

Cycloneda hondurasica, Honduras, *rubripennis*, Texas, *limbifer*, Bahamas, p. 92, *polita*, *ater*, N. America, p. 93, CASEY, t. c. n. spp.

Cydonia lunata axillaris=(*Chilomenes orbicularis* Cas.), WEISE, p. 378, Deutsche ent. Zeitschr. 1899.

Cyrtaulis quadriguttata, E. Africa, WEISE, p. 63, Arch. Naturg. lxv, n. sp.

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Didion n. g. near *Scymnus*, for *D. longulum*, *parviceps* n. spp., California, CASEY, p. 137, t. c.

Epilachna gyllenhali var. n. *cingula*, WEISE, p. 50, Arch. Naturg. lxv; *E. borealis*, natural history, CHITTENDEN, bibliography, pp. 11–20, fig., Bull. U. S. Dep. Agric. Ent. No. 19; *E. bissexguttata*=(*liberiana* Cas.), WEISE, p. 378, Deutsche ent. Zeitschr. 1899.

E. liberiana, p. 163, *peringueyi*, p. 164, Africa, CASEY, J. N. York Ent. Soc. vii; *E. pellex*, E. Africa, WEISE, p. 50, Arch. Naturg. lxv; *E. parvicollis*, Bolivia, CASEY, p. 168, J. N. York Ent. Soc. vii : n. spp.

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Helesius n. g. near *Hyperaspis*, for *nigripennis* Lec. and *H. nubilans*, n. sp., Texas, CASEY, p. 129, J. N. York Ent. Soc. vii.

Hippodamia septemmaculata varr., SCHULZ, p. 223, Ent. Nachr. xxv.

H. puncticollis, p. 78, *dispar*, *subsimilis*, *vernix*, *obliqua*, p. 79, *politissima*, *juncta*, *crotchi*, *complex*, p. 80, *trivittata*, *apicalis*, p. 81, N. America, CASEY, J. N. York Ent. Soc. vii, n. spp.

Hyperaspidius comparatus, p. 130, *ingenitus*, *insignis*, *transfugatus*, *conspiratus*, p. 131, CASEY, t. c. n. spp.

Hyperaspis newcombi, S. Africa, CASEY, p. 166, t. c.; *H. 8-notata*, *notatula*, p. 121, *montanica*, *pinguis*, *lævipennis*, p. 122, *rotunda*, *gemma*, *medialis*, *triangulum*, p. 123, *regalis*, *bicentralis*, *globula*, *wickhami*, p. 124, *pleuralis*, *nevadica*, *psyche*, p. 125, *limbalis*, *nupta*, *inflexa*, *elliptica*, p. 126, *oculaticauda*, *effeta*, *subdepressa*, p. 127, *simulans*, p. 128, N. America, CASEY, t. c. : n. spp.

Lindorus n. g. for *Scymnus*, *lophanthæ* Blaisd., CASEY, p. 162, t. c.

Lotis distincta, *stigmatica*, *nigerrima*, Africa, CASEY, p. 164, t. c. n. spp.

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Mada, characters, WEISE, p. 267, Deutsche ent. Zeitschr. 1899.

M. porioides, Peru, WEISE, l. c. n. sp.

Megilla strenua, *medialis*, N. America, CASEY, p. 76, J. N. York Ent. Soc. vii, n. spp.

Neoharmonia n. g. for *Venusta* and *notulata* Muls., CASEY, p. 90, t. c.

Neomysia n. g. for *pullata* Say, and *N. interrupta*, *randalli*, p. 99, *montana*, p. 100, n. spp., N. America, CASEY, t. c.

Nephaspis n. g., new tribe near *Scymnini*, for *N. gorhami*, *brunnea*, n. spp., Panama, CASEY, p. 168, t. c.

Nipus n. g., *Cranophorini*, for *N. biplagiatus*, *niger*, n. spp., California, CASEY, p. 133, t. c.

Olia n. g., p. 93, for *abdominalis* Say, and *O. plagiata*, *sobrina*, p. 94, *fenestralis*, p. 95, n. spp., N. America, CASEY, t. c.

Paranæmia n. g. for *H. vittigera* Mann. and *P. similis*, n. sp., Colorado, CASEY, p. 76, t. c.

Pharopsis n. g. for *P. subglaber*, n. sp., Africa, CASEY, p. 166, t. c.
Pharus inæqualis, Cape Town, Casey, p. 166, t. c. n. sp.
Poria rubens, Peru, WEISE, p. 271, Deutsche ent. Zeitschr. 1899, n. sp.
Psyllobora parvinotata, obsoleta, p. 101, *renifer, borealis, separata, deficiens*, p. 102, N. America, CASEY, J. N. York Ent. Soc. vii, n. spp.
Pullus integer, E. Africa, WEISE, p. 63, Arch. Naturg. lxv, n. sp.
Rhyzobius trimeni, S. Africa, CASEY, p. 167, J. N. York Ent. Soc. vii, n. sp.
Scymnillus lateralis, eleutheræ, Bahamas, CASEY, p. 115, t. c. n. spp.
Scymnobius subg. n. of *Scymnus*, CASEY, p. 139, t. c.
Scymnomorphus punctipennis, E. Africa, WEISE, p. 65, Arch. Naturg. lxv, n. sp.
Scymnus idoneus, E. Africa, WEISE, p. 65, Arch. Naturg. lxv; *S. capicola, monroviæ, S.* (*Nephus*) *angustus*, Africa, CASEY, p. 167, J. N. York Ent. Soc. vii; *S. flavescens*, p. 139, *nugator*, p. 140, *postpinctus, texanus, rubricauda, chromopyga*, p. 141, *canterius, kansanus*, p. 142, *lowensis, natchezianus, medionotans, subtropicus, kinzeli*, p. 143, *cockerelli, uteanus, rhesus*, p. 144, *indutus, agricola, innocens, solidus, desertorum*, p. 145, *apacheanus, monticola, aridus, luctuosus, humboldti*, p. 146, *sonomæ, gilæ, decipiens, garlandicus, blaisdelli, advena*, p. 147, *extricatus, jacobianus, jacinto, compar*, p. 148, *infans, weidti, renoicus*, p. 149, *tahoensis, subsimilis, mormon, calaveras, saginatus, strenuus*, p. 150, *mendocino, stygicus, tenuivestis, papago, nubes, sarpedon*, p. 152, *occiduus*, p. 153, *innocuus, rusticus, aluticollis, difficilis*, p. 154, *sanguinifer, naviculatus*, p. 155, *scitus, suavis, inops*, p. 156, *adulans*, p. 157, *partitus, houstoni, appalcheus, brunescens, stigma*, p. 158, *bahamicus, putus, dulcis, æger, pusio*, p. 159, N. America, CASEY, J. N. York Ent. Soc. vii : n. spp.
Selvadius n. g. near *Scymnus*, p. 137, for *S. rectus*, n. sp., Arizona, p. 138, CASEY, t. c.
Sidis ochripes, E. Africa, WEISE, p. 64, Arch. Naturg. lxv, n. sp.
Smilia atronitens, minuta, planiceps, N. America, CASEY, p. 135, J. N. York Ent. Soc. vii, n. spp.
Solanophila zuluensis, variation, var. *quadrigemina*, p. 53, *ocellata* and allies, p. 56, *zetterstedti* var. *sexlunata*, p. 58, *sahlbergi*, variation and synonymy, p. 60, WEISE, Arch. Naturg. lxv; *S. acuta* n. n. for *acuminata* W. nec Muls., WEISE, p. 384, Deutsche ent. Zeitschr. 1899.
S. imitata, jole, p. 51, *arquata, guttifera*, p. 52, *maga*, p. 54, *sexguttata, trifaria*, p. 55, *laticollis*, p. 56, *bennigseni*, p. 59, *calisto*, p. 60, *æmula*, p. 61, *fecunda*, p. 62, E. Africa, WEISE, Arch. Naturg. lxv; *S. languida*, p. 258, *gemina*, p. 259, *passiva*, p. 261, *pulchra, honesta*, p. 262, *inserta, divisa*, p. 263, *geometrica, vittigera*, p. 264, *basalis*, p. 265, *propinqua*, p. 266, Peru and Colombia, WEISE, Deutsche ent. Zeitschr. 1899 : n. spp.
Stethorus æthiops, E. Africa, WEISE, p. 64, Arch. Naturg. lxv; *S. jejunus, picipes, brevis, atomus*, N. America, CASEY, p. 136, J. N. York Ent. Soc. vii, n. spp.
Synharmonia subg. n. for *Coccinella conglobata* etc., GANGLBAUER, p. 1002, Kaf. Mitteleur. iii.
Telsimia n. g., new group *Telsimiini*, for *T. tetrasticta*, p. 165, *inornata*, p. 166, n. spp., Africa, CASEY, J. N. York Ent. Soc. vii.
Thalassa montezumæ, habits, HUBBARD, p. 297, P. ent. Soc. Washington, iv.
Toxotoma n. g. for *Epilachna venusta* Er. and *T. andicola*, n. sp., Peru, WEISE, p. 257, Deutsche ent. Zeitschr. 1899.
Xestolotis n. g. for *X. stictica*, n. sp., Liberia, CASEY, p. 164, J. N. York Ent. Soc. vii.
Zagloba n. g., p. 113, for *ornata* Horn, and *Z. laticollis, orbipennis, bicolor, hystrix*, n. spp., N. America, p. 114, CASEY, t. c.; *Z. beaumonti*, Panama, p. 169, CASEY, t. c. n. sp.

CORYLOPHIDÆ, PSEUDOCORYLOPHIDÆ, PHÆNOCEPHALIDÆ.

Monograph of the family *Corylophidæ*; *Phænocephalidæ* to be a distinct family, as well as *Pseudocorylophidæ*, MATTHEWS (798). We have recorded only new species and new genera, not the synonymy.

Anisomeristes flavus, Adelaide, MATTHEWS, p. 113, Mon. Coryloph. n. sp.

Arthrolips lewisii, Japan, p. 83, *fiorii*, Borneo, p. 90, *westwoodii*, Ceylon, p. 91, *oblongus*, Japan, p. 93, *scaber*, Italy, p. 101, MATTHEWS, t. c. n. spp.

Corylophodes punctipennis, Japan, p. 150, *brevicornis*, Queensland, p. 152, *ater*, hab.?, p. 153, *ochraceus*, Ceylon, *pellucidus*, Guadeloupe, p. 159, *schwarzii*, California, p. 160, MATTHEWS, t. c. n. spp.

Corylophus japonicus, Japan, MATTHEWS, p. 138, t. c. n. sp.

Hoplicnema n. g., p. 161, for *H. sallæi*, n. sp., Guadeloupe, MATTHEWS, t. c.

Lewisium n. g., p. 164, for *L. ceylonicum*, p. 166, *japonicum*, p. 167, n. spp., MATTHEWS, t. c.

Meioderus n. g., p. 102, for *M. nitidus*, n. sp., Japan, p. 105, MATTHEWS, t. c.

Meizoderus n. g., p. 105, for *M. fuscus*, n. sp., Japan, p. 107, MATTHEWS, t. c.

Orthoperus japonicus, Japan, p. 187, *cribratus*, p. 190, *gracilipes*, p. 191, *crotchii*, p. 195, *minutissimus*, Guadeloupe, p. 196, MATTHEWS, t. c. n. spp.

Phænocephalidæ, n. fam. for *Phænocephalus castaneus* Woll., MATTHEWS, p. 205, t. c.

Rhypobius dohrnii, Tashkend, p. 175, *japonicus*, Japan, p. 176, *brevicornis*, Martinique, p. 177, MATTHEWS, t. c. n. spp.

Sacium balteatum, N. America, p. 48, *tropicum*, S. and Centr. America, p. 50, *bicolor*, Ceylon, p. 51, *indefinitum*, Brazil, *politum*, Japan, p. 52, *quadrimaculatum*, p. 53, *flaviventre*, Ceylon, *bifasciatum*, Madagascar, p. 54, *formosum*, p. 56, *concinnum*, p. 57, Ceylon, *pubescens*, Venezuela, p. 62, *assimile*, Japan, p. 63, *oblongum*, Italy, p. 64, *mundum*, S. Europe, p. 67, *elongatum*, p. 69, *humerale*, p. 70, N. Zealand, *walkeri*, W. Australia, p. 71, *aureum*, S. America, *rufulum*, p. 72, *picicorne*, p. 73, *brevicorne*, *rugosum*, p. 74, *flavum*, *flavicorne*, p. 75, Japan, *longipes*, Syria, p. 76, *californicum*, N. America, p. 77, MATTHEWS, t. c. n. spp.

Sericoderus forticornis, England, p. 119, MATTHEWS, t. c. n. sp.

(B.) *HYMENOPTERA.*

Proposal of superfamilies, with tables of the families; n. fam. *Cosilidæ*; *Bethylidæ* placed in *Aculeata*, ASHMEAD (35).
Histolysis and histogenesis of muscles, ANGLAS (20–22), TERRE (1137, 1138), DE BRUYNE (154).
Konow's classification noticed, MORICE, pp. 124–127, Ent. Mag. 1899.
Hermaphroditic *Hymenoptera*, DALLA TORRE & FRIESE (267).

ACULEATA.

[The following memoirs relate to *Aculeata*, viz.:—ALFKEN (7–9), ANDRÉ (16–18), ASHMEAD (33–35, 39, 40, 42, 43, 45), BINGHAM (104), BRAUNS (145), CAMERON (187, 188, 475), COCKERELL (233–237), COCKERELL & PORTER (242, 243), DUCKE (313), FERTON (376), C. FOWLER (414–417), FOX (418–420), FRIESE (424–431), HÖPPNER (551, 552), KOSCHEVNIKOW (687), KULAGIN (729, 730), MOCSÁRY (834, 835), MORICE (849, 850), MORLEY (852), PAULCKE (835), PÉREZ (888), PÉRINGUEY (890, 891), PERKINS (892, 893, 895), PLATEAU (938, 939), POULTON (943), REED (961), ROBERTSON (992), RUDOW (1010), SCHULTHESS-SCHINDLER (1027), SLADEN (1083), VACHAL (1163–1165), ZANDER (1238): and for memoirs on *Formicidæ* cf. p. 175.]

Comparative anatomy of female gonapophyses (sting, ovipositor etc.), in the various divisions of the Order, ZANDER (1238).
Relations between Acari and *Aculeata*; peculiar structural modification in *Koptorthosoma*, etc., PERKINS (892).
Abdominal integumental glands, KOSCHEVNIKOV (687).
Account of the *Aculeata*, SHARP (1068) chapters i–iv.
Nests of *Trypoxylon*, *Osmia*, *Odynerus*, RUDOW (1010).

APIDÆ.

Classification of bees, or superfamily *Apoidea*, adopting 14 families which are tabulated, together with the genera, ASHMEAD, pp. 49–100, Tr. Amer. ent. Soc. xxvi.
Classification of bees, ROBERTSON, Canad. Ent. 1899, pp. 338, 343.
Pts. iv, v of Friese's work, including *Eriades*, *Trachusa*, *Anthidium*, *Lithurgus*, *Megachile* (*Chalicodoma*) have appeared (424, 425).
The maxillary palpi of various genera, COCKERELL & PORTER, Ann. Nat. Hist. iv, pp. 403 etc.
Vision and habits of *Anthidium manicatum*, PLATEAU (938).
Observations on the nests of various bees, RUDOW, pp. 154 etc., Illustr. Zeitschr. Ent. iv.
List of the bees of Mexico, COCKERELL (237).
The genitalia ♂ of *Andrena*, MORICE, pp. 229–243, pls. v–vii, Tr. ent. Soc. London 1899.

Acanthosmioides n. g., type *O. odontogaster*, ASHMEAD, p. 76, Tr. Amer. ent. Soc. xxvi.
Ammobates latitarsis, *syriacus*, *rostratus*, Syria, FRIESE, p. 283, Ent. Nachr. xxv, n. spp.

Andrena taraxaci and allies, characters, GIRAUD, pp. 243–252, Tr. ent. Soc. London 1899.

A. curtivalvis, Algeria, *stabiana*, Italy, MORICE, p. 252, Tr. ent. Soc. London 1899; *A. melittoides*, p. 338, *unicincta*, p. 339, *unifasciata*, p. 340, *moricei*, Syria, *helouanensis*, Egypt, p. 341, *rufitibialis*, p. 342, *ægyptiaca*, p. 343, *speciosa*, *brumanensis*, p. 344, Syria, FRIESE, Ent. Nachr. xxv; *A. cragini*, p. 254, *bradwelli*, *kansensis*, p. 255, Kansas, COCKERELL, Ent. News Philad. x; *A. chromotricha*, New Mexico, COCKERELL, p. 128, Entomologist 1899 : n. spp.

Anthidium lituratum, nest-habits, FRIESE, p. 116, Illustr. Zeitschr. Ent. iv.

A. rufomaculatum, Syria, p, 334, *karschi*, Egypt, p. 335, *spiniventris*, Syria, p. 336, FRIESE, Ent. Nachr. xxv, n. spp.

Anthophorula = (*Diadasiella* Ashm.), COCKERELL & PORTER, p. 407, Ann. Nat. Hist. iv.

Anthrena lapponica, habits, HÖPPNER, p. 374, Illustr. Zeitschr. Ent. iv; *A. symphyti* Schmdkn. = *A. angustior* K., ALFKEN, p. 145, Ent. Nachr. xxv; *A. afzeliella* and allies, ALFKEN, pp. 102–106, t. c.

Bombus; characters of the New Mexican, COCKERELL & PORTER, pp. 386–393, Ann. Nat. Hist. iv; *B. latreillellus*, varr., PÉREZ, p. 269, Bull. Soc. ent. France 1899; *B. confusus*, habits, GIARD, p. 82, t. c.; *B.* and *Psithyrus*, habits, relations of the various species, SLADEN, pp. 230–234, Ent. Mag. 1899.

B. perixanthus, *iridis*, p. 386, *monardæ*, p. 387, *prunellæ*, p. 391, New Mexico, COCKERELL & PORTER, Ann. Nat. Hist. iv, n. spp.

Cœnonomada n. g., type *C. bruneri*, ASHMEAD, p. 68, Tr. Amer. ent. Soc. xxvi.

Callandrena, characters, COCKERELL & PORTER, p. 418, Ann. Nat. Hist. iv.

Calliopsis teucrii, *verbenæ*, p. 412, *chlorops*, p. 413, New Mexico, COCKERELL & PORTER, t. c.; *C. scutellaris*, *visaliensis*, p. 406, *anthidius*, p. 407, California, FOWLER, Psyche viii : n. spp.

Centris: the N. American, FOX, pp. 63–70, P. Ac. Philad. 1899.

C. errans, Florida, p. 65, *pallida*, Arizona, p. 66, *marginata*, p. 67, *cockerellii*, New Mexico, *atriventris*, p. 68, *subhyalina*, p. 69, Texas, *xylocopoides*, Trinidad, p. 70, FOX, t. c.; *C. conspersa*, Brazil, *zonata*, Chiriqui, p. 251, *aeneiventris*, Bolivia, *vidua*, Honduras, *fusciventris*, Brazil, p. 252, *flavilabris*, Peru, *facialis*, Bolivia, p. 253, *atripes*, *minuta*, Mexico, *bicornuta*, Brazil, p. 254, MOCSÁRY, Termes. Fuzetek xxii : n. spp.

Ceratina mandibularis ♀, *lævifrons* var. n. *moricei*, *parvula* ♂, *bispinosa* ♀, FRIESE, p. 324, Ent. Nachr. xxv.

Ceratinia: notes on with subg. n. *Ceratinidia*, COCKERELL & PORTER, pp. 404–406, Ann. Nat. Hist. iv.

Ceratinidia subg. n. of *Ceratinia*, for *C. hieroglyphica* etc., COCKERELL & PORTER, p. 406, t. c.

Colletes marginata Thoms. = *C. fodiens* Fourcr., ALFKEN, p. 146, Ent. Nachr. xxv.

C. thomsoni (= *balteatus* Thoms. nec Nyl.), ALFKEN, p. 146, t. c.; *C. nautlanus*, Mexico, COCKERELL, p. 154, Entomologist 1899 : n. spp.

Crocisa ramosa, sleeping, GREEN, p. 214, Ent. Mag. 1899.

Crocisaspidia n. g. type *C. chandleri*, ASHMEAD, p. 68, Tr. Amer. ent. Soc. xxvi.

Cyaneoderes n. g. *Xylocopidæ*, type *C. fairchildi*, ASHMEAD, p. 70, t. c.

Didasia nerea, *cinerea*, California, FOWLER, p. 285, Canad Ent. 1899, n. spp.

Diadasiella n. g. type *D. coquilletti*, ASHMEAD, p. 64, t. c.

Dieunomia n. n. for *Eunomia* Cress. nec Hubn., COCKERELL, p. 14, Entomologist 1899.

D. xerophila, p. 265, *mesillæ*, p. 266, N. America, COCKERELL, t. c. n. spp.

Dioxys quadrispinosa, Egypt, FRIESE, p. 285, Ent. Nachr. xxv, n. sp.
Dufourea cæruleocephala ♀, FRIESE, p. 325, t. c.
D. (*Trilia*, subg. n.) *muoti*, Ghardaia, VACHAL, p. 534, Ann. Soc. ent. France 1899, n. sp.
Emphoropsis n. g. *Anthophoridæ*, ASHMEAD, p. 60, Tr. Amer. ent. Soc. xxvi.
Entechnia grisella, *dakotensis*, N. America, COCKERELL, p. 409, Ann. Nat. Hist. iv, n. spp.
Epeolus similis, Germany, HÖPPNER, p. 355, Ent. Nachr. xxv; *E. flavociliatus*, Egypt, FRIESE, p. 284, t. c. : n. spp.
Epihalictoides subg. n. of *Halictoides* for *H. marginatus* Cresson, COCKERELL & PORTER, p. 420, Ann. Nat. Hist. iv.
Epimelissodes n. g. type *M. atripes*, ASHMEAD, p. 63, Tr. Amer. ent. Soc. xxvi.
Epinomia n. g. type *N. persimilis*, ASHMEAD, p. 88, t. c.
Eriades fasciatus, p. 325, *longiceps*, p. 326, Syria, FRIESE, Ent. Nachr. xxv, n. sp.
Eucera saundersi, Algeria, FRIESE, p. 294, t. c.; *E. cærulescens*, Asia Minor, FRIESE, p. 323, t. c. : n. spp.
Euglossa: monograph, FRIESE, pp. 117–172, Termes. Fuzetek xxii; *E. mexicana*, etc. varr. n., besides synonymy and the following new species :
E. variabilis, p. 135, S. America, *viridissima*, Mexico, p. 136, *mandibularis*, p. 137, *nigrohirta*, p. 142, *magrettii*, p. 148, S. America, *rugosa*, Mexico, p. 152, *auriceps*, p. 156, *mocsaryi*, p. 161, *singularis*, S. America, *panamensis*, Chiriqui, p. 169, *polychroma*, Peru, p. 170, FRIESE, t. c. n. spp.
Eumorpha subg. n. of *Euglossa*, for *E. violacea* etc., FRIESE, p. 126, t. c.
Eusynhalonia n. g. type *S. edwardsii*, ASHMEAD, p. 63, Tr. Amer. ent. Soc. xxvi; note on *E.*, COCKERELL & PORTER, p. 410, Ann. Nat. Hist. iv.
Exoneura froggatti, Sydney, *libanensis*, Lebanon, FRIESE, p. 210, Ent. Nachr. xxv, n. spp.
Geoperdita subg. n. of *Perdita*, for *G. chamæsarachæ*, COCKERELL & PORTER, p. 415, Ann. Nat. Hist. iv.
Habropoda depressa, California, FOWLER, p. 283, Canad. Ent. 1899, n. sp.
Halictus tumulorum, characters and synonymy, ALFKEN, pp. 114–126, Ent. Nachr. xxv; *H. sexmaculatus* Schck. = *H. sexnotatulus* Nyl. var., ALFKEN, p. 145, t. c.
H. foanus, Zambesi, VACHAL, p. 233, Bull. Mus. Paris 1899, n. sp.
Hemihalictus distinguished from *Dufourea*, COCKERELL & PORTER, p. 420, Ann. Nat. Hist. iv.
Heriades glaucum, California, FOWLER, p. 405, Psyche viii, n. sp.
Hesperapis, characters, COCKERELL & PORTER, p. 418, Ann. Nat. Hist. iv.
Heterocentris n. n. for *Gundlachia* Cress. near Pf., COCKERELL, p. 14, Entomologist 1899.
Holcopasites n. g. *Cœlioxinæ*, ASHMEAD, Tr. Amer. ent. Soc. xxvi.
Hylæus minutus Fabr., note on, COCKERELL, p. 14, Entomologist 1899.
Hypomacrotera n. g. *Panurginæ*, for *H. callops* n. sp., New Mexico, and including *Calliopsis subalpinus* Cock., COCKERELL & PORTER, p. 418, Ann. Nat. Hist. iv.
Koptorthosoma; species with modification of ♀ for *Acarid symbiosis*, PERKINS (892).
Macroteropsis n. g. type *Perdita latior*, ASHMEAD, p. 85, Tr. Amer. ent. Soc. xxvi.
M., characters and components, COCKERELL & PORTER, p. 417, Ann. Nat. Hist. iv.
Megachile saulcyi Guér. = (*chilensis* Spinola), PÉREZ, p. 109, Revist. Chilena iii; *M. centuncularis*, habits, SCHENKLING, pp. 148–150, Illustr.

Zeitschr. Ent. iv; *M. analis*, *ericetorum*, habits, HÖPPNER, pp. 376, 377, Illustr. Zeitschr. Ent. iv; *M. disjuncta* and *Parevaspis abdominalis*, relations, BINGHAM, p. 587, J. Bombay Soc. xii; *M. inermis* Prov. =(*simplicissima* Dalla Torre), *M. mitis* n. n. for *inermis* Rad. nec Prov., COCKERELL, p. 14, Entomologist 1899; *M. argentata* var. n. *moricei*, FRIESE, p. 334, Ent. Nachr. xxv; *M. fidelis* var. n. *concinnula*, COCKERELL, p. 159, Entomologist 1899.

Megachile erimæ, New Guinea, MOCSÁRY, p. 484, Termes. Fuzetek xxii; *M. euzona*, p. 105, *grandibarbis*, p. 107, *porteri*, p. 108, Chili, PÉREZ, Revist. Chilena iii; *M. palmarum*, Hawaiian islands, PERKINS, p. 114, Fauna Hawaiiensis i : n. spp.

Megacilissa and *Caupolicana*, note on, COCKERELL & PORTER, p. 411, Ann. Nat. Hist. iv.

Melanostelis rubi Cock. (sub *Stelis*)=(*betheli* Ashm.), COCKERELL, p. 311, Psyche viii.

Meliturga præstans var. n. *syriaca*, FRIESE, p. 324, Ent. Nachr. xxv.

Meliturgopsis n. g. *Anthophoridæ*, ASHMEAD, p. 62, Tr. Amer. ent. Soc. xxvi.

Micrandrena n. g. type *M. pacifica*, ASHMEAD, p. 89, t. c.

Nesoprosopis n. g. p. 75, for Hawaiian *Prosopis*, with the following n. spp., *chlorosticta*, p. 78, *simplex*, *hirsutula*, p. 79, *difficilis*, p. 80, *læta*, p. 81, *volcanica*, *nivalis*, p. 83, *rugulosa*, *vicina*, p. 84, *koæ*, *connectens*, p. 85, *melanothrix*, p. 86, *haleakalæ*, p. 87, *unica*, *laticeps*, p. 88, *neglecta*, p. 89, *kauaiensis*, *comes*, p. 90, *dumetorum*, p. 92, *mutata*, *specularis*, p. 93, *crabronoides*, *mauiensis*, p. 94, *angustula*, p. 95, *dimidiata*, p. 96, *longiceps*, p. 98, *obscurata*, p. 99, *finitima*, p. 100, *assimulans*, p. 101, *inquilina*, p. 102, *hostilis*, p. 104, *sphecodoides*, p. 105, *cæruleipennis*, *pubescens*, p. 107, *setosifrons*, p. 108, *perspicua*, p. 109, *insignis*, p. 110, *andrenoides*, *paradoxica*, p. 111, *erythrodemas*, *anomala*, p. 112, Hawaiian islands, PERKINS, Fauna Hawaiiensis i, n. spp.

Nomada moricei, Syria, FRIESE, p. 286, Ent. Nachr. xxv; *N. interrupta*, p. 159, *obliqua*, *obscura*, p. 160, California, FOWLER, Ent. News Philad. x : n. spp.

Nomia arizonensis, Arizona, COCKERELL, p. 128, Entomologist 1899, n. sp.

Nothosmia n. g. type *O. distincta*, ASHMEAD, p. 75, Tr. Amer. ent. Soc. xxvi.

Osmia solskyi Mor.=*O. leaiana* K., ALFKEN, p. 146, Ent. Nachr. xxv; *O. rossica* n. n. for *taurica* Rad. 1874, FRIESE, p. 64, t. c.; *O. papaveris* var. n. *convolvuli*, *rufa* var. n. *borealis*, DUCKE, pp. 214, 215, t. c.; *O. bicolor* var. n. *nigrohirta*, FRIESE, p. 25, t. c.; *O. rufohirta*, relations with *Chrysis dichroa*, FERTON, pp. 70–73, Bull. Soc. ent. France 1899.

O. alfkenii, p. 211, *epeoliformis*, Algeria, *carsophila*, Fiume, p. 212, *friessana*, Algeria, *kohlii*, Sicily, p. 213, *leucopyga*, Algeria, *magrettii*, Sarepta, p. 214, *purpurata*, Algeria, *saxicola*, Triest, p. 215, DUCKE, Ent. Nachr. xxv; *O. schlettereri*, Syria, p. 327, *nuda*, *paradoxa*, Balkans, p. 328, *semirubra*, p. 329, *ligulicornis*, *mirabilis*, p. 330, *lysholmi*, p. 331, *pici*, p. 332, Syria, *hartliebi*, Egypt, p. 333, FRIESE, Ent. Nachr. xxv; *O. rubricrus*, p. 25, *freygessneri*, *moricei*, *quinquespinosa*, *rufiscopa*, p. 26, *duckei*, *lativentris*, *nasuta*, p. 27, Algeria, FRIESE, t. c.; *O. heloanensis*, Egypt, *bipartita*, Turkestan, *digitata*, p. 61, *gigas*, Algeria, *obtusa*, Asia Minor, p. 62, *dissimilis*, *lobata*, p. 63, Algeria, *laticeps*, Egypt, p. 64, FRIESE, t. c. : n. spp.

Panurginus albitarsis, *fortior*, subsp. n., COCKERELL, p. 129, Entomologist 1899.

P. barberi, New Mexico, COCKERELL, p. 129, t. c. n. sp.

Paradiorys pannonica var. n. *rufipes*, FRIESE, p. 285, Ent. Nachr. xxv.

P. moricei, Egypt, id. l. c. n. sp.

Parahalictoides subg. n. of *Halictoides*, for *H. campanulæ*, etc., COCKERELL & PORTER, p. 420, Ann. Nat. Hist. iv.

Pentaperdita subg. n. of *Perdita*, for *P. albovittata*, COCKERELL & PORTER, p. 415, t. c.

Panurgidæ; Perdita, and other genera of, tabulated, ASHMEAD, Pysche viii, pp. 372–376; *Perdita*, and allies, notes on, COCKERELL, p. 418, Psyche viii; *Perdita* discussed, with new subgenera, COCKERELL & PORTER, pp. 414, 415, Ann. Nat. Hist. iv; *Perdita*, validity of the genera *Philoxanthus* and *Nomadopsis* queried, COCKERELL, pp. 312 and 323, Psyche viii; *P. grandiceps* ♀, characters, COCKERELL, p. 256, Canad. Ent. 1899.

Perdita howardi, *ashmeadi*, p. 492, *sonorensis*, p. 493, *luciæ*, p. 494, Mexico, COCKERELL, Ann. Nat. Hist. iii, n. spp.

Perditella subg. n. of *Perdita*, for *P. laneæ* etc., COCKERELL, p. 312, Psyche viii.

Perditomorpha n. g. type *P. bruneri*, ASHMEAD, p. 86, Tr. Amer. ent. Soc. xxvi.

Podalirius wegeneri, *spinipes*, p. 321, *moricei*, *tridentatus*, p. 322, *schmiedeknechti*, p. 323, Egypt, FRIESE, Ent. Nachr. xxv, n. spp.

Prosopis spinolæ, *albofasciata*, Syria, FRIESE, p. 345, t. c.; *P. bouyssoui*, p. 535, *gaullei*, *gabonica*, W. Africa, *pici*, Beyrout, p. 536, *arabica*, Aden, *andrei*, Burma, *liogonia*, Australia, p. 537, VACHAL, Ann. Soc. ent. France 1899 : n. spp.

Protoxæa n. g. for *Oxæa gloriosa* Fox, COCKERELL & PORTER, p. 410, Ann. Nat. Hist. iv.

Psithyrus, see *Bombus*.

P. cevalliæ, New Mexico, COCKERELL, p. 157, Entomologist 1899, n. sp.

Pyrrhomelecta n. g. type *Epeolus glabrata*, ASHMEAD, p. 66, Tr. Amer. ent. Soc. xxvi.

Sphecodogastra n. g. type *P. texana*, ASHMEAD, p. 92, t. c.

Spinoliella n. g. *Panurgidæ*, type *Campt. nomioides*, ASHMEAD, p. 84, t. c.

Stelis bidentata, Jericho, *thebaidis*, Egypt, FRIESE, p. 284, Ent. Nachr. xxv; *S. denticulata*, Syria, FRIESE, p. 337, Ent. Nachr. xxv : n. spp.

Synhalonia californica, p. 137, *albopilosa*, p. 138, California, FOWLER, Canad. Ent. 1899, n. spp.

Tetraloniella n. g. type *T. graga*, ASHMEAD, p. 61, Tr. Amer. ent. Soc. xxvi.

Tetraperdita subg. n. of *Perdita*, for *P. sexmaculata*, COCKERELL & PORTER, p. 415, Ann. Nat. Hist. iv.

Trilia subg. n. of *Dufourea* q. v.

Xenoglossodes n. g. type *X. albata*, ASHMEAD, p. 63, Tr. Amer. ent. Soc. xxvi.

Xenoglossodes imitatrix, New Mexico, COCKERELL & PORTER, p. 407, Ann. Nat. Hist. iv, n. sp.

Xylocopa, the African and European species, tables of characters, VACHAL, Misc. ent. vii, pp. 89 etc.; the Hawaiian species is *X. chloroptera* from Asia, not *X. brasilianorum*, ALFKEN, p. 317, Ent. Nachr. xxv; *X. modesta* var. n. *anicula*, VACHAL, p. 233, Bull. Mus. Paris 1899.

X. natalensis, p. 97, *biangulata*, *fraterna*, p. 106, *sphinx*, p. 147, *suspiciosa*, p. 156, *kamerunensis*, *senior*, p. 159, Africa, VACHAL, Miscell. ent. vii, n. spp.

Zacesta n. g. *Osmiinæ*, type *Z. rufipes*, ASHMEAD, p. 73, Tr. Amer. ent. Soc. xxvi.

Zadontomerus n. g. *Ceratinidæ*, type, *tejonensis* Cr., ASHMEAD, p. 69, t. c.

VESPIDÆ (or DIPLOPTERA).

Odynerus and *Acari*, PERKINS, p. 39, Ent. Mag. 1899.

Ancistrocerus birenimaculatus, habits, DAVIDSON, p. 180, Ent. News Philad. x.

Eumenes conica, habits, BINGHAM, p. 585, J. Bombay Soc. xii.

E. bipartita, p. 437, *testacea*, p. 438, *insignis*, p. 439, *læviventris*, p. 440, *convexa*, *superficialis*, p. 441, *usitata*, p. 442, *picturata*, p. 444, *suffusa*, p. 445, *compacta*, p. 446, *colorata*, p. 447, *tinctura*, *invenusta*, p. 448, *confluenta*, p. 449, *proxima*, p. 450, *cribrosa*, p. 451, *gracilis*, *fornicata*, p. 452, *deforma*, p. 453, *pilosa*, p. 454, *tegularis*, p. 455, *tuberculata*, p. 456, *rufomaculata*, p. 457, *fulvomaculata*, p. 458, Brazil, FOX, P. Ac. Philad. 1899, n. spp.

Labus brasiliensis, Brazil, FOX, p. 434, t. c. n. sp.

Monobia curvata, Brazil, FOX, p. 463, t. c. n. sp.

Montezumia sparsa, Brazil, FOX, p. 462, t. c. n. sp.

Odynerus venator, *erro*, p. 31, *naiadum*, *erythrognathus*, p. 32, *melanognathus*, *cyphotes*, p. 33, *hiloensis*, *konanus*, p. 34, *orbus*, *cœnosus*, p. 35, *leucozonias*, *eludens*, p. 36, *homochromus*, *dilatipes*, p. 37, *conifer*, *kauaiensis*, p. 38, *peles*, *sociabilis*, p. 39, *scoriaceus*, p. 40, *mobokaiensis*, p. 41, *nubicola*, *ecostatus*, p. 42, *unicus*, p. 43, *camelinus*, p. 44, *brevicostatus*, p. 46, *eupteryx*, *purpurifer*, p. 47, *instabilis*, *deinogaster*, p. 48, *homœogaster*, *heterochromus*, p. 49, *mimus*, *pseudochromus*, p. 50, *leiodemas*, *lævisulcatus*, p. 51, *xanthorhoes*, *nivicola*, p. 52, *dryas*, *erythrostactes*, p. 53, *montivagus*, p. 54, *microdemas*, *monobius*, p. 55, *potamophilus*, p. 56, *petrobius*, p. 57, *soror*, p. 58, *dyserythrias*, *cyanopteryx*, p. 60, *egens*, *nesiotes*, p. 61, *threnodes*, p. 62, *pterophaennes*, *iopteryx*, p. 63, *waianeanus*, *flosculus*, *cooki*, p. 64, *acoelogaster*, *vittativentris*, p. 65, *cephalostictus*, *axestes*, p. 66, *nesotrephes*, *lanaiensis*, p. 68, *pterocheiloides*, p. 69, *chelifer*, p. 70, *nautarum*, p. 72, *oblitus*, *relictus*, p. 74, Hawaiian isles, PERKINS, Fauna Hawaiiensis i, n. spp.

Polybia phthisica, nest, BUYSSON, p. 129, cut, Bull. Soc. ent. France 1899.

Rhynchium junodianum, Delagoa, SCHULTHESS-SCHINDLER, p. 273, Bull. Soc. Vaudoise xxxv, n. sp.

Vespa, relative abundance of the females of various species in Ireland, PACK-BERESFORD, p. 209, Irish Natural. viii; *V. austriaca*, male, BUCKLE, p. 163, t. c.; *V. fernaldi* is a var. of *diabolica*, COCKERELL, p. 255, Canad. Ent. 1899.

Zethoides n. g. for *Z. smithii*, n. sp., Brazil, FOX, p. 436, P. Ac. Philad. 1899.

Zethus (*Calligaster*) *delagoensis*, S. Africa, SCHULTHESS-SCHINDLER, p. 270, Bull. Soc. Vaudoise xxxv; *Z. prominens*, p. 408, *striatifrons*, p. 409, *sessilis*, p. 410, *rufipes*, p. 411, *cristatus*, p. 412, *imperfectus*, p. 413, *cylindricus*, p. 414, *campanulatus*, p. 415, *hexagonus*, p. 416, *bicolor*, p. 417, *productus*, p. 418, *thoracicus*, p. 419, *rugosiceps*, p. 421, *proximus*, p. 422, *diminutus*, p. 423, *coriarius*, *notatus*, p. 425, *inconstans*, p. 426, *punctatus*, p. 427, *simillimus*, p. 428, *emarginatus*, p. 429, *coloratus*, p. 430, *peculiaris*, p. 431, Brazil, FOX, P. Ac. Philad. 1899 : n. spp.

HYMENOPTERA FOSSORIA (or SPHEGOIDEA).

Fossoria of the Hawaiian isles, PERKINS (895).

Classification of the superfamily *Sphegoidea*, with tables of families etc., ASHMEAD, pp. 145 etc., Canad. Ent. 1899.

ANDRÉ commences Vol. viii of the Species des Hyménoptères d'Europe et d'Algérie, with *Mutillides* (16).

Alliognathus n. g. type *C. occidentalis* FOX, ASHMEAD, p. 219, Canad. Ent. 1899.

Allomutilla n. g. for *M. melicerta* Sm., ASHMEAD, p. 57, J. N. York ent. Soc. vii.

Alloneurion n. g. for *A. kotepetica* Rad., ASHMEAD, p. 59, t. c.

Ampulex nebulosa, ♀, BRAUNS, p. 395, Ann. Hofmus. Wien xiii.

A. sanguinicollis, Port Elizabeth, id. p. 394, t. c.; *A.* (*Rhinopsis*) *nigricans*, Khasia hills, CAMERON, p. 57, Ann. Nat. Hist. iv : n. spp.

Ampulicidæ, classification, ASHMEAD, pp. 355–357, Canad. Ent. 1899.

Apterogyna and allies, the characteristics of males, SAUNDERS, p. 228, Ent. Mag. 1899.

Apteropompilus n. g. near *Planiceps*, p. 383, for *A. saussurei*, p. 384, *tosquineti*, p. 385, n. spp., Port Elizabeth, BRAUNS, Ann. Hofmus. Wien xiii.

Argogorytes n. g. type *G. carbonarius* Sm., ASHMEAD, p. 324, Canad. Ent. 1899.

Bembicidæ; table of genera, ASHMEAD, pp. 238–240, t. c.

Bembidula mesillensis distinguished from *capnoptera*, COCKERELL, p. 255, Canad. Ent. 1899.

Bothriomutilla n. g. for *M. rugicollis* Westw., ASHMEAD, p. 55, J. N. York Ent. Soc. vii.

Brachycistis arines, p. 401, *exornatus*, p. 402, Mexico, CAMERON, Biol. Centr.-Amer. Hym. ii, n. spp.

Cœnopsen n. g. near *Psen*, for *C. fuscinervis*, n. sp., Khasia hills, CAMERON, p. 55, Ann. Nat. Hist. iv.

Cerceris arenaria, *rybiensis*, habits, food, ALFKEN, pp. 106–111, Ent. Nachr. xxv.

Crabro saundersi, England, PERKINS, p. 260, Ent. Mag. 1899; *C.* (*Solenius*) *monticola*, p. 15, *molokaiensis*, p. 16, *haleakalæ*, *hawaiiensis*, p. 17, *tumidoventris*, p. 18, with var. *leucognathus*, p. 19, *notostictus*, p. 20, *fulvicrus*, p. 22, *atripennis*, *curtipes*, p. 24, Hawaiian islands, PERKINS, Fauna Hawaiiensis i : n. spp.

Crabronidæ: characters, table of genera, ASHMEAD, pp. 163–174, Canad. Ent. 1899.

Dasymutilla n. g. for *S. gorgone* Blake, ASHMEAD, p. 57, J. N. York Ent. Soc. vii.

Deinomimesa n. g. near *Mimesa*, p. 11, for *D. ferox*, p. 12, *cognata*, *hawaiiensis*, *punæ*, p. 13, *haleakalæ*, p. 14, n. spp., Hawaiian islands, PERKINS, Fauna Hawaiiensis i.

Diploplectron, characters, BRAUNS, p. 413, Ann. Hofmus. Wien xiii.

D. kriegeri, Port Elizabeth, id. p. 414, t. c.; *D. ferrugineus*, *bidentatus*, *foxii*, Colorado, ASHMEAD, p. 56, Ent. News. Philad. x : n. spp.

Dolichocrabro n. g., type *D. wickhamii* Ashm., ASHMEAD, p. 216, Canad. Ent. 1899.

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FORMICIDÆ (or HETEROGYNA).

[The following memoirs relate to *Formicidæ* viz.:—EMERY (340–343), ESCHERICH (349), FOREL (410–413, 475), JANET (600–604), LUDWIG (771), MANTERO (785), WASMANN (1193, 1203, 1208, 1213, 1214), WEBSTER (1217), WELD (1226).]

Morphology and anatomy of head, brain, unpaired sympathetic system, cephalic nerves, corpora allata, tentorium, segmental invaginations of *Myrmica rubra*, JANET (601).
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Atta octospinosa var. n. *echinatior*, p. 34, *moelleri* var. n. *panamensis*, p. 35, pl. i, figg. 16 & 17, FOREL, Biol. Centr.-Amer. Hym. iii.

A. (*Moellerius*) *heyeri*, Brazil, p. 31, FOREL, Biol. Centr.-Amer. Hym. iii, n. sp.

Azteca: habits, pp. 104–107; *A. instabilis* var. n. *major*, p. 107, *nigella* var. n. *subopaca*, p. 110, *delpini antillana* n. st., *foreli*, var n. *xysticola*, p. 111, stt. n. *championi*, *wisina*, p. 112, *alfaroi* stt. n. *lucidula*, *lucida*, p. 113, *xanthochroa*, pl. iv, fig. 14, *aurita pilosula* st. n., p. 115, *chartifex* stt. n. *laticeps*, *multinida*, p. 117, *fasciata* var. n. *nigricans*, p. 122, FOREL, Biol. Centr.-Amer. Hym. iii.

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Champsomyrmex coquereli var. n. *minor*, EMERY, p. 273, t. c.

Cremastogaster stolli, pl. iv, figg. 1, 2, p. 83, *sulcata*, var. n. *ramulinida*, p. 84, FOREL, Biol. Centr.-Amer. Hym. iii; *C. depressa* and varr. described, *striatula* ♀, *kneri* subsp. n. *hottentotta*, p. 482, *tricolor* var. n. *busschodtsi*, p. 487, EMERY, Ann. Soc. ent. Belgique 1899.

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virgula, pl. iv, fig. 4, p. 85, *saussurei*, p. 86, Central America, FOREL, Biol. Centr.-Amer. Hym. iii : n. spp.

Cryptocerus alfaroi, pl. iii, figg. 7, 8, *multispinus*, figg. 9–11, *grandinosus*, fig. 12, *umbraculatus*, figg. 13–16, FOREL, Biol. Centr.-Amer. Hym. iii; *C. grandinosus*, *magdalenensis* n. st., FOREL, p. 275, Berlin. ent. Zeitschr. xliv and p. 303, Ann. Soc. ent. Belgique 1899.

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E. pittieri, pl. i, fig. 15, p. 24, *spoliator*, p. 29, Central America, FOREL, t. c. n. spp.

Ectatomma ruidum, pl. i, fig. 3, *concinnum*, fig. 4, *annulatum*, fig. 5, *sulcatum*, figg. 6, 7, *tornatum*, fig. 9, *curtulum* var. n. *stolli*, p. 7, *dentinode* var. n. *panamense*, *mucronatum* var. n. *minor*, p. 9, FOREL, t. c.

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Ischnomyrmex gonacantha, Madagascar, EMERY, p. 277, Bull. Soc. ent. Ital. xxxi, n. sp.

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Lasius fuliginosus, robber-habits, WASMANN, pp. 85 & 86, Zool. Anz. 1899; *L. americanus*, intelligence, WEBSTER, p. 15, Canad. Ent. 1899; *L. flavus*, pupæ sometimes without cocoons, JANET, Bull. Soc. zool. France 1899, p. 192.

Leptanilla revelierei, varr. n. *bimaculata*, *chobauti*, EMERY, p. 20, Bull. Soc. ent. France 1899.

L. vaucheri, Tangier, EMERY, p. 19, t. c. n. sp.

Leptogenys incisa var. n. *antongilensis*, EMERY, p. 272, Bull. Soc. ent. Ital. xxxi.

L. gracilis, Madagascar, id., p. 271, t. c.; *L. ritae*, *venatrix*, Centr. America, FOREL, p. 17, Biol. Centr.-Amer. Hym. iii : n. spp.

Leptothorax stolli, pl. iii, fig. 17, *sculptiventris* var. n. *major*, p. 54, *echinatinodis* race n. *dalmasi*, p. 55, FOREL, t. c.

L. sibiricus, East Siberia, FOREL, p. 306, Ann. Soc. ent. Belgique 1899; *L. pittieri*, Costa Rica, FOREL, p. 456, Biol. Centr.-Amer. Hym. iii : n. spp.

Macromischa salvini, pl. iii, fig. 18, with var. n. *obscurior*, Panama, FOREL, Biol. Centr.-Amer. Hym. iii, n. sp.

Megalomyrmex foreli, ♂, FOREL, p. 57, t. c.

Monomorium minutum liliuokalanii nov. st., FOREL, p. 119, Fauna Hawaiiensis i.

Myrmelachista longinoda, Panama, p. 124, pl. iv, fig. 18, FOREL, Biol. Centr.-Amer. Hym. iii, n. sp.
Myrmicocrypta dilacerata, pl. iii, fig. 1, race n. *cornuta*, p. 38, FOREL, t. c.
M. subnitida, *godmani*, Centr. America, FOREL, p. 39, t. c. n. spp.
Mystrium oberthuri, ♂, EMERY, p. 267, Bull. Soc. ent. Ital. xxxi.
M. rogeri, Madagascar, FOREL, p. 304, Ann. Soc. ent. Belgique 1899, n. sp.
Odontomachus affinis n. race *panamensis*, pl. i, fig. 13, p. 19, *haematodes* n. race *opaciventris*, fig. 14, p. 21, FOREL, Biol. Centr.-Amer. Hym. iii.
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Extended account of the development and structure of various *Hymenoptera parasitica*, and especially of *Doryctes gallicus*, SEURAT (1060).

Locomotion of larvæ and alimentary canal of larva of *Doryctes*, SEURAT (1063).
Development of female genital organs in *Doryctes*, SEURAT (1062).
Oviposition of some parasites of Xylophagous Insects, SEURAT (1064).
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(*s. l.*, including AGARISTIDÆ, CHALCOSIIDÆ, URANIIDÆ etc.)

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NOCTUIDÆ (incl. CYMATOPHORIDAE and DELTOIDAE).

[*Cf.* CAPPEL (191), COCKERELL (239), DISTANT (288), DRUCE (307), DYAR (323), FUCHS (452), HAMPSON (511), LECHNER (749), LOWER (767), MEYRICK (828), PÜNGELER (947), REBEL (957, 958), SMITH (1088, 1089, 1091–1096), STAUDINGER (1112), STRECKER (1125, 1126), SWINHOE (1132).]

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Xylina torrida, p. 228, *dentilinea*, p. 229, *pomona*, *longior*, p. 230, *itata*, p. 231, N. America, SMITH, J. N. York Ent. Soc. vii, n. spp.

Zauclognatha tenuialis, Tyrol, REBEL, p. 168, pl. iv, fig. 6, Verh. Ges. Wien 1899; *Z. extinctalis*, East Siberia, FUCHS, p. 136, Jahrb. nassau. Ver. lii : n. spp.

Zethes ochrodes, Andaman islands, SWINHOE, p. 115, Ann. Nat. Hist. iii, n. sp.

GEOMETRIDÆ, EPIPLEMIDÆ.

(For URANIIDÆ see BOMBYCES.)

[*Cf.* DOGNIN (298–300), DRUCE (475), DYAR (316), HAMPSON (511), LOWER (767), MEYRICK (828), PÜNGELER (947), REBEL (957), ROTHSCHILD (1000), SNELLEN (1100), STAUDINGER (1112), STRECKER (1126), SWINHOE (1132), THIERRY-MIEG (1142), WARREN (1190–1192).]

The larvæ found on *Myrica gale*, SORHAGEN (1104).

Variation of numerous European species, FUCHS, pp. 139–157, Jahrb. nassau. Ver. lii.

The larvæ of British *Larentiides*, BUCKLER (157).

Abraxas compositata, habitat and synonymy, WARREN, p. 358, Nov. Zool. vi; *A. grossulariata*, second brood, BARRETT, p. 70, Ent. Mag. 1899.

A. comminuta, Flores, *extralineata*, p. 346, *sequilineata*, p. 347, Buru, WARREN, Nov. Zool. vi, n. spp.

Absyrtes australiaria var. n. *fortunata*, THIERRY-MIEG, p. 21, Ann. Soc. ent. Belgique 1899.

Acadra ancillata, Goodenough Isld., *tessellata*, Dorei, WARREN, p. 57, Nov. Zool. vi, n. spp.

Acidalia sericeata, early stages, CHRÉTIEN, p. 127, Bull. Soc. ent. France 1899; *Acidalia litigiosaria*, early stages, CHRÉTIEN, p. 181, t. c.; *A. emarginata*, habits, sexes, RIDING, p. 264, Ent. Rec. xi; *A. emutaria*, pl. ii, fig. 7, p. 39, CAPPEL, Tijdschr. Ent. xlii.
Acollesis umbrata, Unyoro, WARREN, p. 290, Nov. Zool. vi, n. sp.
Actenochroma unicolor, Borneo, WARREN, p. 17, t. c. n. sp.
Adelphocrasta n. g. near *Gonodontis*, for *A. hypocausta*, n. sp., Penang, WARREN, p. 62, t. c.
Agathia exquisita, Obi, WARREN, p. 20, t. c.; *A. punctata*, Dammer Island, WARREN, p. 327, t. c. : n. spp.
Alcis simulatrix, Uganda, WARREN, p. 305, t. c.; *Alcis? paucisignata*, Perak, WARREN, p. 348, t. c.; *A. rufilimes*, Warri, WARREN, p. 51, t. c. : n. spp.
Amaurinia violada, *heza*, Loja, DOGNIN, p. 134, Ann. Soc. ent. Belgique 1899, n. spp.
Amelora crypsigramma, Australia, LOWER, p. 87, P. Linn. Soc. N. S. Wales xxiv, n. sp.
Amraica recursaria var. n. *semifusca*, WARREN, p. 348, Nov. Zool. vi.
Anisocolpia n. g. *Trichopteryginæ*, type *ignobilis* Butl., WARREN, p. 35, t. c.
Anisodes umatillaria, Florida, STRECKER, p. 9, Suppl. 2; *A. chaon*, pl. xcix, fig. 5, *beon*, fig. 7, *albocostata*, fig. 8, *A.? osteria*, fig. 9, p. 537, *sobrina*, figg. 10 & 11, *miniata*, fig. 12, Centr. America, DRUCE, Biol. Centr.-Amer. Heter. ii : n. spp.
Anisogamia subliturata, p. 327, *subvenusta*, p. 328, New Guinea, WARREN, Nov. Zool. vi, n. spp.
Ansorgea n. g. *Hydriomeninæ*, for *A. divergens*, n. sp., Uganda, WARREN, p. 298, t. c.
Antharmostes n. g. near *Hemistola*, for *A. mesoleuca*, n. sp., Warri, WARREN, p. 21, t. c.; *A. mesoleuca* var. n. *semimarginata*, WARREN, p. 290, t. c.
Aphilopota n. g. for *Caberodes interpellans* Butl., WARREN, p. 304, t. c.
Aplodes mimosaria, early stages, DYAR, p. 310, Psyche viii.
A. capensis, Cape Town, WARREN, p. 291, Nov. Zool. vi, n. sp.
Aplogompha yerna, *frena*, Ecuador, DOGNIN, p. 147, Ann. Soc. ent. Belgique 1899, n. spp.
Arycanda evanescens, Sula Mangoli, WARREN, p. 44, Nov. Zool. vi, n. sp.
Aspilaria n. g. for *Aspilates citrinaria* Mab., p. 93, and *A. striolata*, p. 95, pl. fig. 20, *arcuata*, p. 96, fig. 3, *saturata*, p. 97, fig. 19, n. spp., Tierra del Fuego, STAUDINGER, Hamburg. Magalhaens. iv.
Asthena? tharossa, pl. xcix, fig. 16, *malvina*, fig. 13, *sylvia*, fig. 17, p. 539, DRUCE, Biol. Centr.-Amer. Heter. ii; *A. encina*, *hocica*, *silla*, Loja, DOGNIN, p. 137, Ann. Soc. ent. Belgique 1899 : n. spp.
Asthenotricha n. g. *Astheninæ*, for *A. dentatissima*, n. sp., E. Africa, WARREN, p. 34, Nov. Zool. vi; *A. ansorgei*, *flavicoma*, E. Africa, WARREN, p. 296, t. c. : n. spp.
Azata costiguttata, p. 58, *separata*, *triplaga*, p. 59, E. Africa, WARREN, t. c.; *A. funebris*, New Guinea, WARREN, p. 354, t. c. : n. spp.
Biston alpinus, habits etc., SWOBODA, pp. 167 etc., Illustr. Zeitschr. Ent. iv.
Blepharoctenia perclara, Formosa, WARREN, p. 49, Nov. Zool. vi, n. sp.
Boarmia adamata referred to *Darisa*, WARREN, p. 52, t. c.
B. lamiaria, *aniclaria*, *excelsaria*, N. America, STRECKER, p. 10, Supp. 2, n. spp.
Bociraza latiflava var. n. *restricta*, WARREN, p. 324, t. c.
Bracca flavitænia, Sula Mangoli, WARREN, p. 44, t. c. n. sp.
Bursada basistriga invadens subsp. n., WARREN, p. 45, t. c.; *B. obnubilata* var. n. *inversa*, WARREN, p. 343, t. c.
B. flavannulata, New Guinea, id. l. c.; *B. atribasalis*, Obi, *interspilata*,

p. 45, *unifascia*, St. Aignan, *radicata*, D'Entrecasteaux, p. 46, WARREN, t. c. : n. spp.
Bursadopsis n. g. for *B. basalis*, Obi, *præflavata*, Sudest Island, n. spp., WARREN, t. c. p. 344.
Bytharia lucida, New Hanover, WARREN, p. 14, t. c. n. sp.
Caberodes lobana, Loja, DOGNIN, p. 253, Ann. Soc. ent. Belgique 1899, n. sp.
Cacorista n. g. *Sterrhinæ*, for *C. amputata*, n. sp., Unyoro, WARREN, p. 292, Nov. Zool. vi, n. sp.
Calicha brunnea, Unyoro, WARREN, p. 305, t. c.; *C. rufiplaga*, N. S. Wales, WARREN, p. 348, t. c. : n. spp.
Callipotnia n. g. *Œnochrominæ*, for *C. multicolor*, n. sp., Dorei, WARREN, p. 323, t. c.
Cambogia currasca, *C.? jifia*, p. 135, *bolana*, *burla*, *chasca*, Loja, DOGNIN, p. 136, Ann. Soc. ent. Belgique 1899; *C.? scama*, Loja, DOGNIN, p. 252, t. c. : n. spp.
Camptogramma squamulata, Australia, WARREN, p. 341, Nov. Zool. vi, n. sp.
Carige absorpta, Japan, WARREN, p. 338, t. c.; *C. combinata*, Flores, WARREN, p. 35, t. c. : n. spp.
Caripeta seductaria, Pennsylvania, STRECKER, p. 9, Suppl. 2, n. sp.
Casbia anomalata, Woodlark Isld., WARREN, p. 353, Nov. Zool. vi, n. sp.
Celerena aurata, Rossel Isld., *exacta*, Solomon Islds., *mitis*, Sudest Isld., WARREN, p. 325, t. c. n. spp.
Chætolopha n. g. for *Scordylia oxyntis* Meyr., WARREN, p. 41, t. c.
Chlorocraspedia n. g. *Sterrhinæ*, p. 292, for *C. ansorgei*, n. sp., Unyoro, p. 293, WARREN, t. c.
Chlorochroma? marginata, Kei, WARREN, p. 21, t. c. n. sp.
Chloroclystis fragilis, Louisiade Arch., *infuscata*, Borneo, *marmorata*, Warri, WARREN, p. 38, t. c. n. spp.
Chloroctenis n. g. near *Aplochlora*, for *C. similis*, n. sp., Warri, WARREN, p. 42, t. c.
Chlorodrepana n. g. *Geometrinæ*, for *C. rothi*, n. sp., Warri, WARREN, p. 22, t. c.
Chloromachia n. g. type *Comibæna divapala* Wlk., with *C.? pallidata*, n. sp., New Guinea, WARREN, t. c.
Chogada epistictis var. n. *flavifasciata*, Warren, p. 52, t. c.
C. munda, Zululand, id. l. c.; *C. vittata*, Rossel Isld., WARREN, p. 349, t. c. : n. spp.
Choregia n. g. *Deiliniinæ*, for *C. consocia*, n. sp., E. Africa, WARREN, p. 300, t. c.
Chrysocraspeda croceomarginata, ♂, WARREN, p. 30, t. c.
C. concentrica, *regalis*, St. Aignan, WARREN, p. 30, t. c. n. spp.
Chrysolene flavipuncta, Philippines, *insolita*, New Guinea, p. 331, *miniosa*, Penang, p. 332, WARREN, t. c. n. spp.
Cidaria cyanata var. n. *flavomixta*, *C. vitalbata* var. n. *conspicuata*, HIRSCKE, p. 357, Verh. Ges. Wien 1899; *C. hastulata*, *subhastata*, variation, GAUCKLER, p. 17, Ent. Nachr. xxv.
C. holophœa, Socotra, HAMPSON, p. 38, Bull. Liverp. Mus. ii; *C. ralaria*, *teja*, Loja, DOGNIN, p. 252, Ann. Soc. ent. Belgique 1899; *C. eucosmiata*, p. 100, pl. fig. 22, *antarctica*, p. 101, fig. 5, *obsoletaria*, p. 102, fig. 23, *C.? detritata*, p. 103, Tierra del Fuego, STAUDINGER, Hamburg. Magalhaens. iv : n. spp.
Cleora? demorsaria, p. 9, *fumosaria*, *phantasmaria*, p. 10, N. America, STRECKER, Suppl. 2, n. spp.
Cœnina cervina, Abyssinia, WARREN, p. 63, Nov. Zool. vi, n. sp.
Comostolodes subhyalina n. n. for *Euchloris inductaria* Hmpsn., WARREN, p. 22, t. c.

Coptogonia lucens, Woodlark Isld., WARREN, p. 35, t. c. n. sp.
Corymica fulvimaculata, Penang, WARREN, p. 63, t. c. n. sp.
Cosmethis basiflava, Kei, WARREN, p. 345, t. c. n. sp.
Cosymbia irregularis, referred to *Lipomelia*, WARREN, p. 295, t. c.
Craspedia fulvicolor, Socotra, HAMPSON, p. 38, Bull. Liverp. Mus. ii; *C. improba*, *ochreofusa*, p. 293, *tenera*, *tricommata*, p. 294, E. Africa, WARREN, p. 294, Nov. Zool. vi; *C. albilarvata*, Formosa, *dissimulans*, *habilis*, Warri, WARREN, p. 31, t. c.; *C. exangulata*, New Guinea, *nigrocellata*, Dammer Isld., p. 332, *ocellata*, Sambava, *spissitarsata*, Sumatra, p. 333, WARREN, t. c. : n. spp.
Craspedosis n. subspp., WARREN, pp. 46, 47, t. c.
Cr. niveosignata, Rox Isld., *semicrocea*, Suer, WARREN, p. 47, t. c.; *C. flavimedia*, New Guinea, *sibilla*, Halmahera, p. 345, *xanthosoma*, Buru, p. 346, WARREN, t. c. : n. spp.
Darisa ? marmorata, New Guinea, WARREN, p. 349, t. c. n. sp.
Dasyuris holombra, Maui, MEYRICK, p. 168, Fauna Hawaiiensis i, n. sp.
Decetia dichromata, variation, WARREN, p. 319, Nov. Zool. vi.
Deileptenia maculata, Penang, WARREN, p. 52, t. c. n. sp.
Deinotrichia dentigerata, Penang, WARREN, p. 53, t. c. n. sp.
Diplurodes contacta, Java, WARREN, p. 53, t. c. n. sp.
Dirades pendula, Bali, WARREN, p. 9, t. c.; *D. albilinea*, New Guinea, *erectinota*, Ron Isld., *vespertilio*, Sudest Isld., WARREN, p. 320, t. c. : n. spp.
Dizuga sordida, Rossel Isld., WARREN, p. 334, t. c. n. sp.
Dochephora pilosa, fig. 15, pl. xcix, DRUCE, Biol. Centr.-Amer. Heter. ii.
Ectropis crassa, Natal, *E. ? subaurata*, Zambesi, WARREN, p. 306, Nov. Zool. vi; *E. nigrocellata*, Suer, WARREN, p. 54, t. c.; *E. hypochromaria*, New Guinea, *rufibrunnea*, Queensland, WARREN, p. 350, t. c. : n. spp.
Eilicrinia hocina, Loja, DOGNIN, p. 252, Ann. Soc. ent. Belgique 1899, n. sp.
Endropia amethystaria, p. 6, *jucundaria*, *sirenaria*, N. America, *canidiaria*, Chihuahua, p. 7, STRECKER, Suppl. 2, n. spp.
Eois roseocincta, E. Africa, WARREN, p. 32, Nov. Zool. vi; *E. ? rufula*, Solomon Islds., WARREN, p. 334, t. c.; *E. albipunctata*, Panama, pl. xcix, fig. 14, p. 539, DRUCE, Biol. Centr.-Amer. Heter. ii : n. spp.
Epigynopteryx brunnea, Warri, WARREN, p. 64, Nov. Zool. vi, n. sp.
Epiplema illineata n. n. for *illiturata* Warr., WARREN, p. 11, t. c.
E. atrifasciata, Khasia hills, p. 9, *barbara*, Uganda, *bicolor*, Ron Isld., p. 10, *diversipennis*, Jobi, p. 11, WARREN, t. c.; *E. concinnula*, Woodlark Isld., *pallidistriata*, Penang, p. 321, *simplex*, Nilgiri hills, *spissata*, Sudest Isld., p. 322, WARREN, t. c. : n. spp.
Epirrhoe crispa, Costa Rica, DRUCE, p. 544, pl. xcix, fig. 27, Biol. Centr.-Amer. Heter. ii, n. sp.
Episauris n. g. near *Sauris*, p. 371, for *E. kiliani*, n. sp., Tenerife, p. 372, REBEL, Ann. Hofmus. Wien xiii.
Episophthalma subaurata, New Guinea, WARREN, p. 329, Nov. Zool. vi, n. sp.
Episteira n. g. near *Steirophora*, for *E. colligata*, n. sp., Flores, WARREN, p. 36, t. c.
Erebomorpha moorei, India (= *Vindusara compositata* Moore nec Gn.), THIERRY-MIEG, p. 20, Ann. Soc. ent. Belgique 1899, n. sp.
Ereunetea n. g. near *Terina*, p. 302, for *E. fulgida*, n. sp., Congo, p. 303, WARREN, Nov. Zool. vi.
Erosia ? imella, Guatemala, pl. xcix, fig. 18, p. 540, DRUCE, Biol. Centr.-Amer. Heter. ii, n. sp.
Erythrolophus bipunctatus, New Guinea, WARREN, p. 334, Nov. Zool. vi, n. sp.

Eubyja turpis, Flores, *E.* ? *expansa*, Niger, WARREN, p. 49, t. c. n. spp.
Eubyjodonta comitata, Amurland, *concinna*, Ili, WARREN, p. 50, t. c. n. spp.
Euchloris inductaria = (*smaragdus* Hmpsn.), WARREN, p. 22, t. c.
Eucosmia fuegata, Tierra del Fuego, STAUDINGER, p. 92, pl. fig. 21, Hamburg. Magalhaens. iv, n. sp.
Eucrostes rubristicta, Uganda, WARREN, p. 23, Nov. Zool. vi, n. sp.
Eucymatoge phæocausta, *scoriodes*, p. 160, *dryinombra*, *staurophragma*, p. 161, *niphoreas*, *rhodopyra*, *prasinombra*, p. 162, *orichloris*, *craterias*, p. 163, Hawaiian Isles, MEYRICK, Fauna Hawaiiensis i, n. spp.
Eugnesia fasciata, Louisiade Arch., WARREN, p. 43, Nov. Zool. vi, n. sp.
Eumelea aureliata var. n. *attenuata*, WARREN, p. 326, t. c.
E. obesata var. n. *corpulenta*, THIERRY-MIEG, p. 21, Ann. Soc. ent. Belgique 1899.
E. apicata, New Guinea, p. 14, *aurigenaria*, Lombok, p. 15, WARREN, Nov. Zool. vi, n. sp.
Eupagia albistriga, Madagascar, WARREN, p. 311, t. c. n. sp.
Eupithecia gemellata, natural history, BASTELBERGER, pp. 85, 86, Illustr. Zeitschr. Ent. iv; *E. laquearia*, pl. ii, fig. 8, CAPPEL, Tijdschr. Ent. xlii.
E. golgolata, *laisata*, N. America, STRECKER, p. 11, Suppl. 2; *E. duena*, *chincha*, *trapezoida*, p. 138, *veleta*, *trampa*, *linda*, p. 139, Loja, *batida*, Colombia, *niga*, *sorda*, p. 140, *yangana*, *muralia*, *cabria*, Ecuador, *madura*, Colombia, p. 141, *pupila*, *turbanta*, *hombrilla*, p. 142, *hilacha*, *hormiga*, p. 143, *mejala*, *pulgata*, *minucia*, p. 144, Loja, DOGNIN, Ann. Soc. ent. Belgique 1899; *E. ratoncilla*, Loja, DOGNIN, p. 328, t. c.; *E. antarctica*, Tierra del Fuego, STAUDINGER, p. 105, pl. fig. 18, Hamburg. Magalhaens. iv : n. spp.
Eutrapela alcipheraria, early stages, DYAR, p. 395, Psyche viii, n. sp.
Euxena crypsichroma ♀, WARREN, p. 23, Nov. Zool. vi.
Evarzia tripunctata, Flores, WARREN, p. 355, t. c. n. sp.
Gasterocome subfasciata, Penang, WARREN, p. 351, t. c. n. sp.
Gelasma cynthia, St. Anna, p. 23, *sublustris*, Ron Isld., *unicolor*, Flores, p. 24, WARREN, t. c. n. spp.
Gelasma ? *perlineata*, Solomon Islds., WARREN, p. 330, t. c. n. sp.
Geometra bellonaria, Colorado, STRECKER, p. 8, Suppl. 2, n. sp.
Glaucopteryx indecora, Amurland, WARREN, p. 341, Nov. Zool. vi, n. sp.
Gnophos finitimaria, East Siberia, FUCHS, p. 149, Jahrb. nassau. Ver. lii, n. sp.
Gonanticlea carnifasciata, Unyoro, WARREN, p. 299, Nov. Zool. vi, n. sp.
Gonodela effusata var. n. *uniformis*, WARREN, p. 355, t. c.
G. alternata, *maculosa*, p. 306, *obliquilineata*, *unifilata*, p. 307, Africa, WARREN, t. c. n. spp.
Gonodontis hypochraria, early stages, DYAR, p. 415, Psyche viii.
Gonophaga albipuncta, Louisiade Arch., WARREN, p. 357, Nov. Zool. vi, n. sp.
Gorytodes ? *mexicana*, Mexico, pl. xcix, fig. 19, p. 542, DRUCE, Biol. Centr.-Amer. Heter. ii, n. sp.
Helicopage velata, varietal forms, WARREN, p. 330, Nov. Zool. vi.
Hemipogon simplex, Sudest Isld., WARREN, p. 334, t. c. n. sp.
Hemistola simplex, Formosa, WARREN, p. 24, t. c. n. sp.
Heterostegane subfasciata, Borneo, WARREN, p. 43, t. c. n. sp.
Hirasodes n. g. for *Hirasa contubernalis* Moore, WARREN, p. 51, t. c.
Holorista ? *spectabilis*, Natal, WARREN, p. 36, t. c.; *H. marginepunctata*, Philippines, WARREN, p. 339, t. c. : n. spp.
Hydata ? *dubia*, Warri, WARREN, p. 24, t. c. n. sp.
Hydriomena elisata, N. Carolina, STRECKER, p. 11, Suppl. 2; *H. macuta*, Loja, DOGNIN, p. 328, Ann. Soc. ent. Belgique 1899; *H. aphoristis*, Hawaii, MEYRICK, p. 165, Fauna Hawaiiensis i : n. spp.

Hylemera ansorgei, discinota, p. 303, *funesta*, p. 304, E. Africa, WARREN, Nov. Zool. vi, n. spp.
Hyperythra ædiphlebia, Socotra, HAMPSON, p. 37, Bull. Liverp. Mus. ii; *H. simplex*, Sula Besi, WARREN, p. 60, Nov. Zool. vi : n. spp.
Hypochroma perfulvata, New Guinea, WARREN, p. 326, t. c.; *H. multicolor*, St. Aignan, p. 17, *purpurifera, viridicoma*, Solomon Islds., p. 18, WARREN, t. c. : n. spp.
Hypocometa rufulata, Flores, WARREN, p. 339, t. c. n. sp.
Hyposidra incomptaria Wlk. = (*variabilis* Warr.), WARREN, p. 357, t. c.
Idiotephra n. g. near *Tephrina*, for *I. curvivena*, n. sp., Niger, WARREN, p. 61, t. c.
Induna albida, E. Africa, WARREN, p. 294, t. c. n. sp.
Iodis viridaurea, Ron Isld., WARREN, p. 25, t. c. n. sp.
Iridoplecta n. g. type *Trygodes ferrifera* Moore, WARREN, p. 64, t. c.
Ischnopteryx zurra, Loja, DOGNIN, p. 144, Ann. Soc. ent. Belgique 1899, n. sp.
Laophila n. g. = *Lomographa* Meyr. nec Hübn., components of the genus, WARREN, p. 342, Nov. Zool. vi.
Larentia narosa, Mexico, DRUCE, p. 543, pl. xcix, fig. 24, Biol. Centr.-Amer. Heter. ii, n. sp.
Lepiodes ? maxima, pl. xcix, fig. 21, *unicolor*, fig. 22, *punctata*, fig. 23, Centr. America, DRUCE, p. 542, Biol. Centr.-Amer. Heter. ii, n. spp.
Leptomeris postlineata, India, WARREN, p. 335, Nov. Zool. vi, n. sp.
Leucetæra subfuscata, Buru, WARREN, p. 342, t. c. n. sp.
Leucodesmia n. g. type *Comibæna dispansa* Wlk., WARREN, p. 25, t. c.
Leucoglyphica ? fasciata, Warri, WARREN, p. 25, t. c. n. sp.
Lignyoptera fumidaria, larva, HABICH, p. 357, Verh. Ges. Wien 1899.
Lithostege mesoleucata, Central Asia, PÜNGELER, p. 105, Deutsche ent. Zeitschr. 1899, n. sp.
Lobophora nigroangulata, Seattle, STRECKER, p. 10, Suppl. 2; *L.* (*? Pachrophylla*) *jacintaria*, p. 88, pl. fig. 6, *lætaria*, p. 90, Tierra del Fuego, STAUDINGER, Hamburg. Magalhaens. iv : n. spp.
Lophobates n. g. *Ascotinæ*, for *L. ochreicosta*, n. sp., Khasia hills, WARREN, p. 54, Nov. Zool. vi.
Lozogramma mercedulata, San Francisco, STRECKER, p. 9, Suppl. 2, n. sp.
Lychnosea runcinaria, Colorado, STRECKER, p. 7, t. c. n. sp.
Lygris compositata Gn. and *junctilineata* Walk. nomenclature, THIERRY-MIEG, p. 21, Ann. Soc. ent. Belgique 1899.
Macaria teucaria, ancillaria, lapitaria, p. 8, *ægaria*, p. 9, N. America, STRECKER, Suppl. 2, n. spp.
Maidana pallidiplaga, Rossel Isld., WARREN, p. 351, Nov. Zool. vi, n. sp.
Marmopteryx topasata, Utah, STRECKER, p. 9, Suppl. 2, n. sp.
Megatheca ? ampla, Lombok, WARREN, p. 39, Nov. Zool. vi, n. sp.
Mesoleuca intermediata, early stages, DYAR, p. 438, Psyche viii.
Metallochlora proximata, Solomon Islds., WARREN, p. 26, Nov. Zool. vi, n. sp.
Metanema vanusaria, New Mexico, STRECKER, p. 6, Suppl. 2, n. sp.
Miantochora incolorata, Warri, WARREN, p. 64, Nov. Zool. vi, n. sp.
Microloxia cærulea referred to *Syndromodes*, WARREN, p. 27, t. c.
M. divergens, Unyoro, WARREN, p. 291, t. c. n. sp.
Microtome n. g. near *Pœcilalcis*, for *M. trigonata*, n. sp., Rossel Isld., WARREN, p. 352, t. c.
Milionea zonea, characters, pl. v, fig. 4, p. 112, SNELLEN, Tijdschr. Ent. xlii.
M. pumilio, Sumba, ROTHSCHILD, p. 70, Nov. Zool. vi, n. sp.
Mimomiza annulata, Flores, WARREN, p. 358, t. c. n. sp.
Mnesithetis delicata, Masindi, WARREN, p. 295, t. c. n. sp.
Monobolodes fuscibrunnea, New Guinea, WARREN, p. 323, t. c.; *M. pallens*, Woodlark Isld., p. 11, *rectifascia*, Suer, p. 12, WARREN, t. c. : n. spp.

Monoctenia phyllomorpha, Australia, LOWER, p. 86, P. Linn. Soc. N. S. Wales xxiv, n. sp.
Nadagara irretracta, Solomon Islds., WARREN, p. 356, Nov. Zool. vi, n. sp.
Nadagarodes inexactata Wlk. (sub. *Acidalia*) = (*straminea* Warr. and *Luxiaria ditrota* Meyr.), WARREN, p. 354, t. c.
N. duplicipuncta, Louisiade Arch., WARREN, p. 356, t. c.; *N. flavipectus*, Solomon Islds., WARREN, p. 59, t. c. : n. spp.
Nemoria subcroceata, early stages, DYAR, p. 386, Psyche viii.
N. pisina, Tenimber Islds., WARREN, p. 26, Nov. Zool. vi; *N. aurantiocolorata*, Florida, STRECKER, p. 8, Suppl. 2 : n. spp.
Noreia venusta, Borneo, p. 12, *vinacea*, Jobi, p. 13, WARREN, Nov. Zool. vi, n. spp.
Obeidia tigrata varr. n. *decipiens*, *neglecta*, THIERRY-MIEG, p. 20, Ann. Soc. ent. Belgique 1899.
O. tigridata, Sikkim, THIERRY-MIEG, p. 20, t. c. n. sp.
Ochyria ansorgei, Uganda, WARREN, p. 299, Nov. Zool. vi; *O. minuta*, New Guinea, WARREN, p. 41, t. c.; *O. anticostiata*, Canada, STRECKER, p. 11, Suppl. 2 : n. spp.
Œnospila ? simplex, Java, WARREN, p. 330, Nov. Zool. vi; *Œ. lucifimbria*, Solomon Islds., WARREN, p. 27, t. c. : n. spp.
Omiza tortuosa ♂, WARREN, p. 312, t. c.
O. simplaria, Sumatra, SNELLEN, p. 113, Tijdschr. Ent. xlii; *O. lubricata*, Flores, WARREN, p. 65, Nov. Zool. vi : n. spp.
Opistheploce rufula, New Guinea, WARREN, p. 340, t. c. n. sp.
Oporabia dilutata, varr. n., PROUT, pp. 121, 122, Ent. Rec. xi.
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Parametrodes aurantiacata, Sudest Isld., WARREN, p. 354, t. c. n. sp.
Parasynegia parumnotata, Borneo, WARREN, p. 343, t. c. n. sp.
Pasiphila = (*Helastiodes* Warr.), WARREN, p. 39, t. c.
Percnoplilota fluviata, early stages, DYAR, p. 429, Psyche viii.
Perixera pallida, var. *ampliguttata* is another species, WARREN, p. 336, Nov. Zool. vi.
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Perizoma cancellata, Masindi, WARREN, p. 299, t. c. n. sp.
Petrodava olivata var. n. *perfusca*, WARREN, p. 308, t. c.; *P. olivata insularis* subsp. n., WARREN, p. 61, t. c.
P. subapicata, Natal, WARREN, l. c. n. sp.
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Pisoraca grisea referred to *Perixera*, WARREN, p. 336, t. c.; *P. inornata* ♂, WARREN, p. 33, t. c.
Pitthea abbreviata, Warri, WARREN, p. 47, t. c. n. sp.
Plagodis approximaria, Oregon, DYAR, p. 266, Canad. Ent. 1899, n. sp.
Plochucha cristata, Solomon Islds., WARREN, p. 335, Nov. Zool. vi, n. sp.
Pœcilalcis indigna, Penang, WARREN, p. 352, t. c. n. sp.
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Psaliodes myxa, Costa Rica, DRUCE, p. 544, pl. xcix, fig. 28, Biol. Centr.-Amer. Heter. ii; *P. liebra*, *tripita*, p. 145, *rica*, *lisera*, *cedaza*, p. 146, *jabata*, p. 147, Loja, DOGNIN, Ann. Soc. ent. Belgique 1899 : n. spp.
Pseudosalpis n. g. for *Salpis albipunctaria* and *scodionæata* Mab., STAUDINGER, p. 82, Hamburg. Magalhaens. iv.
Pseudaria n. g., placed between *Cidaria* and *Eupithecia*, for *P. debilis*, n. sp., Tierra del Fuego, STAUDINGER, t. c.
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Remodes ? rubriplaga, Obi, WARREN, p. 37, t. c. n. sp.
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Stibaroma stenodesma, Australia, LOWER, p. 87, P. Linn. Soc. N. S. Wales xxiv, n. sp.

Stygomorpha n. g. for *Erebomorpha fulguraria* Walk., THIERRY-MIEG, p. 21, Ann. Soc. ent. Belgique 1899.
Symmacra inconspicua, New Guinea, WARREN, p. 338, Nov. Zool. vi, n. sp.
Syndromodes vivida, Natal, WARREN, p. 27, t. c. n. sp.
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Addæa fragilis, Dammer Isld., WARREN, p. 314, Nov. Zool. vi, n. sp.
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Aporodes nanalis=(*obscura* Warr. and *H. staudingeri* B.-B.), SNELLEN, p. 58, Tijdschr. Ent. xlii.
Archernis fulvalis, India, HAMPSON, p. 711, J. Bombay Soc. xii, n. sp.
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Crossophora? microthyralis, Peru, SNELLEN, p. 89, t. c. n. sp.
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Heterographis (*Staudingeria*) *innotalis*, *H. flammealis*, Socotra, HAMPSON, p. 39, Bull. Liverp. Mus. ii, n. spp.
Homœosoma soraella, Mexico, DRUCE, p. 565, pl. CI, fig. 28, Biol. Centr.-Amer. Heter. ii; *H. amphibola*, Kauai, MEYRICK, p. 197, pl. v, fig. 12, Fauna Hawaiiensis i : n. spp.
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Isothauma n. g. type *Siculodes opalinula* Mab., WARREN, p. 6, Nov. Zool. vi; *I.? serraticornis*, E. Africa, WARREN, p. 288, t. c. n. sp.

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Letchena angulata, New Guinea, WARREN, p. 316, Nov. Zool. vi, n. sp.

Leucinodes bilinealis, Celebes, p. 93, pl. iv, fig, 15, *unilinealis*, Java, p. 94, SNELLEN, Tijdschr. Ent. xlii, n. spp.

Liopasia dorsalis, Trinidad, HAMPSON, p. 216, P. Zool. Soc. London 1899, n. sp.

Locastra phyalis, Mexico, DRUCE, p. 547, pl. c, fig. 7, Biol. Centr.-Amer. Heter. ii, n. sp.

Loxostege conisialis, *melanopis*, pl. vi, fig. 7, *helioxantha*, fig. 8, p. 226, Hawaiian Isles, MEYRICK, Fauna Hawaiiensis i, n. spp.

Macalla hypnonalis, Sikhim, HAMPSON, p. 480, J. Bombay Soc. xii, n. sp.

Margaronia cyanomichla, Kauai, MEYRICK, p. 201, pl. v, fig. 17, Fauna Hawaiiensis i, n. sp.

Mecyna apicalis, Amazons, HAMPSON, p. 224, P. Zool. Soc. London 1899, n. sp.

Meroctena dichochrosialis, Bali, HAMPSON, p. 178, P. Zool. Soc. London 1899; *M. zygialis*, Mexico, DRUCE, p. 551, pl. c, fig. 13, Biol. Centr.-Amer. Heter. ii : n. spp.

Mestolobes amethystias, pl. vi, fig. 10, p. 229, *chrysomolybda*, fig. 11, *xanthoscia*, *crypsichrysa*, p. 230, *erinnys*, fig. 12, *arctura*, *sirina*, *epidelta*, fig. 13, p. 231, *iochrysa*, fig. 14, *droseropa*, p. 232, *ombrias*, fig. 15, *banausa*, p. 233, *ochrias*, *scleropis*, fig. 16, p. 234, *eurylyca*, *orthrias*, fig. 17, p. 235, *pessias*, fig. 18, *chimonias*, p. 236, *aphrias*, *mesacma*, fig. 19, *chlorolychna*, p. 237, *perixantha*, fig. 20, p. 238, *pragmatica*, *autodoxa*, fig. 21, p. 239, *homalopa*, p. 240, Hawaiian Isles, MEYRICK, Fauna Hawaiiensis i, n. spp.

Metallarcha leucodetis, Australia, LOWER, P. Linn. Soc. N. S. Wales xxiv, n. sp.

Metaprotus n. g. *Pyraustinæ*, type *asuridia* Butl., HAMPSON, p. 282, P. Zool. Soc. London 1899.

Metasia and *Metasiodes*, note on, with list of species, SNELLEN, pp. 76 & 77, Tijdschr. Ent. xlii.

Metasia albula, Amboina, *criophora*, E. Africa, p. 237, *zinckenialis*, Queensland, p. 238, *holoxanthia*, Natal, p. 239, HAMPSON, P. Zool. Soc. London 1899, n. spp.

Monoloxis cinerascens, fig. 4, pl. c, Biol. Centr.-Amer. Heter. ii.

M.? diffusa, Panama, pl. c, fig. 5, p. 546, DRUCE, t. c. n. sp.

Neothyris n. g. *Thyrididæ*, for *N. aspirans*, n. sp., Woodlark Isld., WARREN, p. 6, Nov. Zool. vi.

Noctuelia polystrigalis, Peru, HAMPSON, p. 279, P. Zool. Soc. London 1899, n. sp.
Nomophila astigmalis, Mexico, HAMPSON, p. 201, t. c. 1899, n. sp.
Noorda ignealis, Fergusson Isld., *esmeralda*, Mexico, *sinualis*, Natal, *margaritalis*, E. Africa, p. 221, *nigropunctalis*, Perak, p. 222, HAMPSON, t. c. 1899, n. spp.
Omiodes euryprora, pl. v, fig. 18, *asaphombra*, p. 202, *iridias*, fig. 19, *epicentra*, p. 203, *anastrepta*, *telegrapha*, fig. 20, p. 204, *monogramma*, fig. 21, p. 205, Hawaiian Isles, MEYRICK, Fauna Hawaiiensis i, n. spp.
Omphalota n. g. *Phycitides*, p. 479, for *O. chlorobasis*, n. sp., Simla, p. 480, HAMPSON, J. Bombay Soc. xii.
Omphisa ingens, Fergusson Isld., HAMPSON, p. 184, P. Zool. Soc. London 1899, n. sp.
Orobena griseostrialis, p. 59, *sorhageni*, p. 61, *kukunorensis*, p. 63, Centr. Asia, SAUBER, Verh. Ver. Hamburg Unterh. x; *O. lygialis*, Borneo and Java, SNELLEN, p. 60, pl. iii, fig. 3, Tijdschr. Ent. xlii : n. spp.
Orthomecyna metalycia, pl. vi, fig. 22, *phæophanes*, p. 241, *heterodyas*, fig. 23, *crossias*, p. 242, *alloptila*, *chrysophanes*, fig. 24, p. 243, *epicausta*, fig. 25, *picrodes*, fig. 26, *mesochasma*, pl. vii, fig. 1, p. 244, *amphilyca*, p. 245, Hawaiian Isles, MEYRICK, Fauna Hawaiiensis i, n. spp.
Orthoraphis metasticta, India, HAMPSON, p. 705, J. Bombay Soc. xii, n. sp.
Pachyzancla semilaniata, fig. 16, pl. c, Biol. Centr.-Amer. Heter. ii.
P. coptobasalis, p. 712, pl. A, fig. 25, *latifuscalis*, p. 713, India, HAMPSON, J. Bombay Soc. xii ; *P. desmioides*, Fergusson Isld., p. 203, *pachycera*, p. 204, *acyptera*, Mexico, *innotalis*, Venezuela, p. 205, HAMPSON, P. Zool. Soc. London 1899 : n. spp.
Pagyda argyritis, India, HAMPSON, p. 707, pl. A, fig. 26, J. Bombay Soc. xii, n. sp.
Parachma meterythra, fig. 6, pl. c, Biol. Centr.-Amer. Heter. ii.
Pharambara nitens var. n. *atribasalis*, WARREN, p. 317, Nov. Zool. vi.
P. commanotata, Borneo, id. l. c. ; *P. subscripta*, Warri, WARREN, p. 7, t. c. ; *P. ansorgei*, Masindi, WARREN, p. 289, t. c. : n. sp.
Phlyctænia calliastra, p. 207, *hyacinthias*, pl. v, fig. 22, *synastra*, p. 208, *chalcophanes*, p. 209, fig. 23, *chytropa*, *ephippias*, fig. 24, p. 210, *iocrossa*, fig. 25, p. 212, *platyleuca*, *metasema*, fig. 27, p. 214, *ommatias*, fig. 28, *caminopis*, p. 215, *pachygramma*, fig. 29, p. 216, *liopis*, fig. 30, p. 218, *endopyra*, *rhodius*, p. 219, *pyranthes*, fig. 31, *heterodoxa*, fig. 32, p. 220, Hawaiian Isles, MEYRICK, Fauna Hawaiiensis i, n. spp.
Phryganodes omphalobasis, fig. 14, pl. CI, Biol. Centr.-Amer. Heter. ii.
Pionea africalis, early stages, CHRÉTIEN, p. 162, Bull. Soc. ent. France 1899 ; *P. fusculalis*, fig. 25, pl. c, *phœalis*, figs. 1 & 2, pl. CI, *antigastridia*, fig. 26, pl. c, Biol. Centr.-Amer. Heter. ii.
P. thyriphora, p. 240, *ectoxanthia*, Brazil, *clavifera*, Australia, p. 241, *scoparialis*, Tibet, *fusculalis*, p. 243, *phœalis*, *antigastridia*, p. 244, Mexico, *leucorraspia*, Brazil, p. 245, *tripartalis*, Peru, p. 247, *phæochysis*, Ecuador, p. 248, *nolalis*, Celebes, p. 249, *leucostictalis*, Queensland, p. 250, HAMPSON, P. Zool. Soc. London 1899 ; *P. asychanalis* pl. CI, fig. 3, *belialis*, fig. 4, *thyanalis*, fig. 5, *chanesalis*, fig. 8, *tisiasalis*, fig. 6, *aponianalis*, fig. 7, p. 557, *crambialis*, fig. 9, p. 558, Centr. America, DRUCE, t. c. : n. spp.
Platamonia medinalis, Celebes, SNELLEN, p. 85, pl. iv, figs. 9–11, Tijdschr. Ent. xlii, n. sp.
Pococera pemphusalis, Mexico, DRUCE, p. 548, pl. c, fig. 9, Biol. Centr.-Amer. Heter. ii, n. sp.
Pogonotrophus n. g. [printed *Pogonophorus* but altered by appended slip] near *Ratusa*, for *P. tancrei*, n. sp., Centr. Asia, SAUBER, p. 63, Verh. Ver. Hamburg Unterh. x.
Polygrammodes hyalosticta, Natuna Islds., *limitalis*, Borneo, p. 197, nons-

grialis, Peru, *rufinalis*, Venezuela, p. 198, *farinalis*, Brazil, p. 199, HAMPSON, P. Zool. Soc. London 1899; *P. cyamon*, Mexico, DRUCE, p. 256, pl. c, fig. 15, Biol. Centr.-Amer. Heter. ii : n. spp.

Prionopteryx exonoma, Oahu, MEYRICK, p. 198, pl. v, fig. 13, Fauna Hawaiiensis i, n. sp.

Proconica n. g. placed next *Tyspanodes*, for *P. nigrocyanalis*, n. sp., India, HAMPSON, p. 708, J. Bombay Soc. xii.

Promylæa n. g. near *Mestolobes*, for *P. pyropa*, pl. vi, fig. 9, n. sp., Molokai, MEYRICK, p. 227, Fauna Hawaiiensis i.

Proterozeuxis n. g. *Thyrididæ* near *Hypolamprus*, p. 7, for *P. splendida*, n. sp., Natal, p. 8, WARREN, Nov. Zool. vi.

Proterozeuxis ansorgei, Masindi, WARREN, p. 289, t. c. n. sp.

Protaulacistis n. g. *Pyraustinæ*, for *P. cataphæa*, n. sp., Maui, pl. vii, fig. 2, MEYRICK, p. 246, Fauna Hawaiiensis i.

Pycnulia sylea, Mexico, DRUCE, pl. CI, fig. 24, p. 564, Biol. Centr.-Amer. Heter. ii, n. sp.

Pyralis electalis, fig. 10, pl. c, t. c.

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P. obtusanalis, Mexico, pl. c, fig. 12, p. 550, DRUCE, t. c.; *P. xanthothysana*, Sikkim, p. 253, *perelegans*, Colombia, p. 256, *glaucescens*, Ecuador, p. 260, *postrubralis*, Mexico, *perfulvalis*, Queensland, p. 262, *lithosialis*, Natal, p. 263, *pyrocausta*, Brazil, p. 264, *trizonalis*, Mexico, p. 267, *phœophœnicea*, Brazil, *latinigralis*, Niger, *tetraplagialis*, Mashonaland, p. 268, HAMPSON, P. Zool. Soc. London 1899; *P. bryochloris*, pl. vi, fig. 1, *dracontias*, fig. 2, p. 221, *dryadopa*, *chloropis*, p. 222, *thermantis*, fig. 3, *brontias*, p. 223, *psychropa*, fig. 4, p. 224, *phaethontia*, fig. 5, p. 225, Hawaiian Isles, MEYRICK, Fauna Hawaiiensis i : n. spp.

Salbia lotanalis, Costa Rica, DRUCE, p. 553, Biol. Centr.-Amer. Heter. ii, n. sp.

Samia ecclesialis, *castellalis*, full synonymy, BERG, pp. 385 & 386, An. Mus. Buenos Aires vi.

S.? asadias, Centr. America, DRUCE, p. 555, pl. c, fig. 19, Biol. Centr.-Amer. Heter. ii, n. sp.

Sameodes notodontalis, Borneo, *sanguimarginalis*, Colombia, p. 175, *suffusalis*, Argentina, *enderythralis*, Sikkim, *monostictalis*, Amboina, p. 176, *distictalis*, Pulo Laut, *citrinalis*, Dominica, *polythiptalis*, New Guinea, p. 177, HAMPSON, P. Zool. Soc. London 1899, n. spp.

Scoparia dubitalis, var., FRYER, p. 103, Ent. Mag. 1899; *S. dubitalis* var. n. *alba*, TUTT, p. 142, Ent. Rec. xi.

S. schizodesma, Australia, LOWER, P. Linn. Soc. N. S. Wales xxiv; *S. albipunctata*, Costa Rica, DRUCE, p. 563, pl. CI, fig. 22, Biol. Centr.-Amer. Heter. ii; *S. antarcticalis*, Tierra del Fuego, STAUDINGER, p. 106, Hamburg. Magalhaens. iv; *S. tetranesa*, pl. vii, fig. 3, *rhombias*, p. 249, *amphicypella*, fig. 4, *oxythyma*, *balanopis*, fig. 5, p. 250, *passalota*, *orthoria*, fig. 6, p. 251, *mesoleuca*, *miantis*, *antimacha*, p. 252, *tyraula*, fig. 7, *pentaspila*, p. 253, *thalamias*, fig. 8, p. 254, *loxocentra*, fig. 9, *halirrhoa*, p. 255, *actias*, fig. 10, *melanocephala*, p. 256, *struthias*, fig. 11, p. 257, *triacma*, fig. 12, p. 258, *cryerodes*, fig. 13, *cratæa*, p. 259, *siderina*, fig. 15, p. 260, *parachlora*, fig. 16, *ianthes*, fig. 17, *marmarias*, p. 261, *œolias*, *nectarias*, fig. 18, p. 262, *bucolica*, *pyrseutis*, p. 263, *crebochalca*, *œnopis*, fig. 19, *nyctombra*, p. 264, *clonodes*, fig. 20, *thyellopis*, p. 265, *melichlora*, fig. 21, *zophochlora*, p. 266, *empedia*, p. 267, *dactyliopa*, fig. 22, p. 268, *geraea*, fig. 23, *epimystis*, p. 269, *peronetis*, p. 270, *halmœa*, p. 272, *platyscia*, fig. 26, *probolœa*, fig. 27, p. 273, *omichlopis*, fig. 28, p. 274, Hawaiian Isles, MEYRICK, Fauna Hawaiiensis i : n. spp.

Siculodes nævina var. n. *carneata*, WARREN, p. 8, Nov. Zool. vi.

Stenia grisealis, Socotra, HAMPSON, p. 39, Bull. Liverp. Mus. ii, n. sp.

Steniodes costipunctalis, Java, SNELLEN, p. 77, pl. iv, figg. 4 & 5, Tijdschr. Ent. xlii, n. sp.
Striglina asinina, Sula Mangoli, WARREN, p. 8, Nov. Zool. vi; *S. reversa*, *variegata*, New Guinea, WARREN, p. 318, t. c. : n. spp.
Symphleps ochracea var. n. *pallida*, WARREN, p. 318, t. c.
Syngamia tremulalis, Mexico, DRUCE, p. 559, pl. CI, fig. 15, Biol. Centr.-Amer. Heter. ii, n. sp.
Tabidia flexulalis, New Guinea, SNELLEN, p. 62, Tijdschr. Ent. xlii, n. sp.
Talis geralea, p. 198, pl. v, fig. 14, *homodora*, p. 199, *hyacinthina*, pl. v, fig. 15, Hawaiian Isles, MEYRICK, Fauna Hawaiiensis i, n. spp.
Thelcteria dichocrosialis, Java, HAMPSON, p. 276, P. Zool. Soc. London 1899, n. sp.
Thliptoceras distictalis, Burma, *cœnostolalis*, Sierra Leone, p. 179, *polygrammodes*, Natal, p. 180, HAMPSON, t. c. n. spp.
Trichophysetis metamelalis, Khasia hills, HAMPSON, p. 484, J. Bombay Soc. xii, n. sp.
Tridesmodes n. g. near *Siculodes*, for *T. ramiculata*, n. sp., Masindi, WARREN, p. 290, Nov. Zool. vi.
Triphassa zonalis, India, HAMPSON, p. 485, J. Bombay Soc. xii, n. sp.
Tyndis erebalis, India, HAMPSON, p. 700, t. c. n. sp.
Tyspanodes suasalis, Mexico, DRUCE, p. 553, pl. c, fig. 21, Biol. Centr.-Amer. Heter. ii, n. sp.

TORTRICIDÆ.

[*Cf.* CARADJA (192), FRYER (451), KENNEL (631), LOWER (767), LUFF (772), TEPPER (1136), WALSINGHAM (1184).]

Protective resemblance of *Penthina gentiana* and *Eupœcilia roseana* to environment, FRYER (451).

Arotrophora gonomela, S. Australia, LOWER, p. 94, P. Linn. Soc. N. S. Wales xxiv, n. sp.
Cacoecia postvittana, habits, FROGGATT, p. 876, pl. fig. 1, Agric. Gaz. N. S. W. x.
Capua melichroa, *oxygona*, p. 92, *placodes*, p. 93, Australia, LOWER, P. Linn. Soc. N. S. Wales xxiv, n. spp.
Cnephasia sinuana, larva and pupa, BANKES, p. 105, Ent. Mag. 1899.
Cochylis purana, early stages, CHRÉTIEN, p. 273, Bull. Soc. ent. France 1899.
C. diana, Maraseli, p. 13, pl. i, fig. 12, *plusiana*, Samarcand, p. 14, fig. 13, *coloratana*, Saisan, fig. 14, *discolorana*, fig. 15, Transalai, p. 16, *asiana*, Namangan, fig. 16, p. 18, *morosana*, Usgent, p. 19, fig. 17, *tauriana*, Crimea, p. 20, fig. 18, *rufosignana*, Riviera, p. 21, fig. 19, *dispersana*, Samarcand, p. 23, fig. 20, *dilutana*, Lepsa, p. 24, fig. 21, *infantana* (no locality), p. 25, fig. 22, *amœnana*, Samarcand, p. 26, fig. 23, *apricana*, Caucasus, p. 27, fig. 24, *undulatana*, Zara, p. 28, fig. 25, *cinereoviridana*, Namangan, p. 29, fig. 26, *despectana*, Alai, fig. 27, *lucentana*, Marasch, fig. 28, p. 30, *eburneana*, Malatia, figg. 29 & 30, p. 31, *mœstana*, Schahkuh, fig. 31, p. 32, *multifasciana*, fig. 32, Alai, p. 33, *ochrostriana*, fig. 33, Osch, *spirana*, Lepsa, fig. 34, p. 35, *nœviferana*, Caucasus, fig. 35, p. 36, *punctulatana*, Beyrut, fig. 36, *pardaliana*, Samarcand, fig. 37, p. 38, *nefandana*, Asia Minor, fig. 38, p. 39, *nigrociliana*, Granada, fig. 39, p. 40, KENNEL, Deutsche ent. Zeitschr. Lep. 1899, n. spp.
Cryptophlebia n. g. *Olethreutinæ*, p. 105, for *C. carpophaga*, n. sp., Bengal, p. 106, pl. vii, fig. 1, WALSINGHAM, Ind. Mus. Notes iv.
Dipterina ? phyllodes, Queensland, LOWER, p. 93, P. Linn. Soc. N. S. Wales xxiv, n. sp.

Grapholitha nisella, variation, CROMBRUGGHE, p. 75, Ann. Soc. ent. Belgique 1899.

G. strigulatana, Portugal, p. 41, pl. 1, fig. 40, *cretaceana*, Spain, p. 42, fig. 41, KENNEL, Deutsche ent. Zeitschr. Lep.; *G. moldovana*, Roumania, CARADJA, p. 193, t. c. 1899 : n. spp.

Hedya servillana bred from galls of *Cecidomyia salicis*, COLLIN, p. 70, Ent. Mag. 1899; queried, BANKES, p. 93, t. c.

Laspeyresia dorsana varr., BANKES, p. 12, t. c.

L. lomacula, Australia, LOWER, p. 95, P. Linn. Soc. N. S. Wales xxiv, n. sp.

Lozopera beatricella, larva, PURDEY, p. 289, Ent. Mag. 1899.

Olindia ulmana, early stages, CROMBRUGGHE, p. 313, Ann. Soc. ent. Belgique 1899.

O. cuencana, Spain, KENNEL, p. 13, pl. i, fig. 11, Deutsche ent. Zeitschr. Lep. 1899, n. sp.

Parienia n. n. for *Exoria* Meyrick nec Hb., BERG, p. 78, Comun. Mus. Buenos Aires i.

Phalonia vectisana, life-history, larva and pupa, BANKES, p. 178, Ent. Mag. 1899.

Pthoroblastis luedersiana=(*Psammene dignella* Wals.), generic characters, REBEL, p. 172, Verh. Ges. Wien 1899.

Sciaphila virginana, Mardin, KENNEL, p. 12, pl. i, fig. 10, Deutsche ent. Zeitschr. 1899, n. sp.

Tortrix glaphyriana, habits, FROGGATT, p. 269, pl., Agric. Gaz. N. S. W. x; *T. lafauryana*, larva, habits, SORHAGEN, p. 260, Illustr. Zeitschr. Ent. iv.

T. (*Pandemis*) *jecorana*, Schahrud, p. 4, pl. i, fig. 1, *T.* (*Lozotænia*) *musculinana*, Shetland, fig. 2, *T.* (*Lophoderus*) *ancillana*, Beyrut, fig. 3, p. 5, *T.* (*Heterognomon*) *gigantana*, Amur, fig. 4, p. 6, *soriana*, Beyrut, fig. 5, p. 7, *præclarana*, Saisan, fig. 6, p. 8, *aglossana*, Tarbagatai, p. 9, fig. 7, *T.* (*Dichelia*) *diffusana*, Malaga, fig. 8, p. 10, *T.* (*Amphysa*) *lithosiana*, Spain, p. 11, fig. 9, KENNEL, Deutsche ent. Zeitschr. Lep. 1899; *T. eugramma*, Victoria, LOWER, p. 91, P. Linn. Soc. N. S. Wales xxiv : n. spp.

TINEIDÆ.

[*Cf.* BANKES (62), CARADJA (192), CHAPMAN (207, 208), CHRÉTIEN (219, 220), CONSTANT (245), FUCHS (454), HOFMANN (542, 543) JOANNIS (607, 608), LOWER (767), LUFF (772), MARTINI (794), PETRY (900), REBEL (958, 959), SAUBER (1014), SCHÜTZE (1036), STAUDINGER (1112), TUTT (1158), WALSINGHAM (1184–1187).]

Tineidæ and *Psychidæ*, relations, TUTT, pp. 149 & 150, Ent. Rec. xi.

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Adela ochsenheimerella, *congruella*, *associatella*, larval habits, SCHÜTZE, pp. 164–169, Stettin. ent. Zeit. lx.

A. kukunorensis, p. 66, *badioumbratella*, *tancrei*, p. 67, Centr. Asia, SAUBER, Verh. Ver. Hamburg Unterh. x, n. spp.

Æoloscelis orthochroa, Australia, LOWER, p. 113, P. Linn. Soc. N. S. Wales xxiv, n. sp.

Agriophara hyalinota, Australia, LOWER, p. 104, t. c. n. sp.

Antispila petryi, Germany, MARTINI, p. 398, Stettin. ent. Zeit. lix, n. sp.

Aproærema vinella, larva and pupa, BANKES, p. 202, Ent. Mag. 1899.

Argyresthia præcocella, abdominalis, dilectella, aurulentella, larvæ, SCHÜTZE, pp. 173–178, Stettin. ent. Zeit. lx; *A. rufella*, early stages, CHRÉTIEN, p. 223, Naturaliste 1899; *A. atmoriella*, larva and its habits, WALSINGHAM, p. 142, Ent. Mag. 1899; *A. conjugella* injurious to apples, REUTER (988, 989).

Aristotelia (sub-*Lita*) *unicolorella* Dp. = (*Anacampsis unicolorella* H.-S. = *Gelechia immaculatella* Dgl.), BANKES, pp. 33–36, Ent. Mag. 1899.

A. tenebrella Hb. = (*Butalis buffonella* Mill.), WALSINGHAM & DURRANT, p. 36, t. c.

Bankesia n. g. type *Sol. conspurcatella*, TUTT, p. 191, Ent. Rec. xi; *B. montanella*, Corsica, p. 257, *staintoni*, Britain, p. 258, WALSINGHAM, t. c. : n. spp.

Batrachedra sp., Australia, FROGGATT, p. 776, plate, Agric. Gaz. N. S. W. x.

B. hoplogramma, p. 112, *capnospila*, p. 113, Australia, LOWER, P. Linn. Soc. N. S. Wales xxiv, n. spp.

Blabophanes ? chrysogramma, Brisbane, LOWER, p. 116, t. c. n. sp.

Borkhausenia maculifera, Australia, LOWER, p. 111, t. c. n. sp.

Brachmia pruinosella, larva and habits, SCHÜTZE, p. 179, Stettin. ent. Zeit. lx.

Brachycrossata tripunctella, early stages, CHRÉTIEN, pp. 202–204, Bull. Soc. ent. France 1899.

Butalis potentillæ, early stages, CHRÉTIEN, p. 219, t. c.

Cæsyra pelodesma, xanthocoma, Australia, LOWER, p. 110, P. Linn. Soc. N. S. Wales xxiv, n. spp.

Calantica eximiella, Tyrol, REBEL, p. 176, pl. iv, fig. 7, Verh. Ges. Wien 1899, n. sp.

Coleophora tricolor, Norfolk, WALSINGHAM, p. 201, Ent. Mag. 1899; *C. kroneella*, Austria, FUCHS, p. 183, Stettin. ent. Zeit. lx; *C. kyffhusana*, Thuringia, PETRY, p. 394, t. c. 1899; *C. didymella*, Barcelonette, CHRÉTIEN, p. 146, Bull. Soc. ent. France 1899; *C. stefanii*, Sicily, JOANNIS, p. 331, t. c. : n. spp.

Cryptolechia tortricella, Tierra del Fuego, STAUDINGER, p. 111, pl. fig. 10, Hamburg. Magalhaens. iv, n. sp.

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Depressaria remotella, Tierra del Fuego, STAUDINGER, p. 111, pl. fig. 27, Hamburg. Magalhaens. iv, n. sp.

Eidophasia syenitella, larval habits, BRABANT, p. 333, Bull. Soc. ent. France 1899.

Elachista hedemanni, p. 524, *heringi*, p. 525, Austria, REBEL, Verh. Ges. Wien 1899, n. spp.

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Stenocephalus medius var. n. *brevis*, HORVÁTH, p. 448, t. c.
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Klinophilos n. n. type *Cimex lectularius* L., KIRKALDY, p. 219, Entomologist 1899.
Klinophilos horrifer, Socotra, KIRKALDY, p. 45, Bull. Liverp. Mus. ii, n. sp.

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Acanthia reuteriella, W. Australia, KIRKALDY, p. 194, Entomologist 1899; *A.* (*Chiloxanthus*) *rogeri*, p. 92, *A. araucanica*, p. 93, Chili, *cygni*, Australia, p. 94, KIRKALDY, Rev. Ent. franc. xviii : n. spp.
Salda recticollis, Japan, HORVÁTH, p. 369, Termes. Fuzetek xxii, n. sp.

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Mononyx revised and tabulated, MONTANDON, Bull. Soc. Bucarest viii, pp. 392–407.

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Naucoris madagascariensis, Madagascar, MONTANDON, p. 81, Bull. Mus. Paris 1899; *N. rottensis*, fossil, SCHLECHTENDAL (1024) : n. spp.

Nepa cinerea, and *Notonecta*, oviposition, Enock, p. xiv, P. ent. Soc. London 1899.

Notonecta americana, eggs, KIRKALDY, pp. 94, 96, Rev. Ent. franc. xviii.

Peloridium hammoniorum = (*Nordenskjœldiella insignis* Hagl.), HORVÁTH, p. 100, Rev. Ent. franc. xviii.

Peltopterus nervosus, Marianne Islds., MONTANDON, p. 779, Bull. Soc. Bucarest viii, n. sp.

Plea leachi n. n. for *minutissima*, auct. M'GREGOR & KIRKALDY, p. 5, Tr. Perthshire Soc. iii.

P. hovana, Madagascar, KIRKALDY, p. 104, Ann. Soc. ent. France 1899; *P. borellii*, S. America, KIRKALDY, Boll. Mus. Torino xiv, No. 352 : n. spp.

Tenagobia n. g. near *Micronecta*, for *T. marmorata* n. sp., Venezuela, BERGROTH, p. 282, Ent. Mag. 1899.

Zaitha : the male carries eggs, oviposition, SLATER (1084).

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[*Cf.* ASHMEAD (41, 45), BAKER (56, 57), BALL (59–61), BERG (81), BLÜMMEL (108), BREDDIN (146), DISTANT (286, 290, 291, 295), FOWLER (
HAGLUND (507, 508), HANDLIRSCH (515), HOLMGREN

(566), KARSCH (618), KIRKALDY (652, 658), KUPKA (732, 733), LANDER (739), MARCHAL (786), MELICHAR (816, 817), PUTON (948), RÜBSAAMEN (1007), SCHWARZ (1038), THEN (1139); also *Aleurodidæ*, p. 253, *Aphidæ*, p. 253, and *Coccidæ*, p. 254.]

The ovaries of *Cercopides*, *Jassides* and *Fulgorides*; distinctions of those of *Fulgorides*, HOLMGREN (546).

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Melampsalta omar, Socotra, KIRKALDY, p. 45, Bull. Liverp. Mus. ii, n. sp.

Platypleura sylvia, Transvaal, DISTANT, p. 81, Ann. Nat. Hist. iii; *P. heathi*, pl. xvi, fig. 1, p. 475, *andriana*, fig. 2, Madagascar, *quanza*, fig. 3, p. 476, Angola, *pembana*, E. Africa, p. 477, DISTANT, Tr. ent. Soc. London 1899 : n. spp.

Tibicen sirius, Transvaal, DISTANT, p. 82, Ann. Nat. Hist. iii, n. sp.

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Achilla n. g. *Achilidæ*, p. 62, for *A. marginatifrons*, n. sp., Cameroons, p. 63, HAGLUND, Ofv. Ak. Forh. 1899.

Achilus costalis, *A. ? collaris*, Cameroons, HAGLUND, p. 63, t. c. n. spp.

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Dictyophara frontata, Cameroons, HAGLUND, p. 60, Ofv. Ak. Forh. 1899, n. sp.

Elasmoscelis iram, Socotra, KIRKALDY, p. 45, Bull. Liverp. Mus. ii, n. sp.

Eurysa carinata, Tunis, MELICHAR, p. 181, Wien. ent. Zeit. 1899, n. sp.

Flatida n. g. *Flatides*, for *F. furcigera*, n. sp., Cameroons, HAGLUND, p. 70, Ofv. Ak. Forh. 1899.

Flatoides stali, Cameroons, HAGLUND, p. 71, t. c. n. sp.

Gergithomorphus n. g. *Issides*, p. 66, for *G. fasciatifrons*, n. sp., Cameroons, p. 67, HAGLUND, t. c.

Goniopsis n. g. near *Mindura*, for *G. mystica*, n. sp., Singapore, MELICHAR, p. 272, Verh. Ges. Wien 1899.

Hypæpa diversa, Costa Rica, DISTANT, p. 113, Ann. Nat. Hist. iv, n. sp.

Mamatola n. g. *Fulgorinæ*, p. 113, for *M. singularis*, n. sp., Transvaal, p. 114, DISTANT, t. c.

Mindura serena, Sula Mangoli, MELICHAR, p. 292, Verh. Ges. Wien 1899, n. sp.

Myndus beduinus, Tunis, MELICHAR, p. 177, Wien. ent. Zeit. 1899, n. sp.
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Phylloxera; reproductive cycles, HENNEGUY, pp. 62–69, Bull. Soc. Philom. (ix) i; *P. quercus*, habitat etc., CHOLODKOVSKY, p. 476, Zool. Anz. 1899; *P. vastatrix* in Australia, Agric. Gaz. N. S. W. x, pp. 677, and 377, 4 plates.
Rhizobius jujubæ, India, BUCKTON, p. 277, pl. xvii, fig. 2, Ind. Mus. Notes iv, n. sp.
Schizoneura obliqua, note on, CHOLODKOVSKY, p. 473, Zool. Anz. 1899.
Stomaphis graaffii, male with atrophied trophi, CHOLODKOVSKY, p. 472, pl. fig. 6, t. c.
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[*Cf.* HEMPEL (530), QUAINTANCE (949).]

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GREEN (485) has published the 2nd part of his important work on the *Coccidæ* of Ceylon, devoted to *Chionaspis* and *Parlatoria*.

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The odour of *Coccidæ*, JOHNSON (609); also WEBSTER, p. 4, Canad. Ent. 1899, HOWARD, t. c. p. 96.

Odour, and sense of smell, COCKERELL, p. 36, t. c.

The *Coccidæ* of Mexico, COCKERELL (475).

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COCKERELL (209) gives a list of the species, including some novelties, with synonyms, mentioned in CHARMOY D'EMMEREZ's paper (209) on the *Coccidæ* of Mauritius.

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Aonidia blanchardi noticed, referred to *Parlatoria*, PACKARD, p. 417, Science ix.

A. banksiæ, W. Australia, FULLER, p. 473, Tr. ent. Soc. London 1899, n. sp.

Aonidiella, monograph, LEONARDI, pp. 174–197, Riv. Patol. veg. vii.

A. bromiliæ, England under glass, LEONARDI, p. 177, t. c. n. sp.

Aspidiotus; monograph continued, LEONARDI (755); the N. American species of the subgenn. *Diaspidiotus* and *Hemiberlesia*, NEWELL, Contr. Zool. Ent. Iowa Coll. No. 3; Kansas species described, variation; *fernaldi albiventer*, subsp. n., p. 6, *æsculi solus*, subsp. n., p. 12, HUNTER, pp. 1–12, pls. i–vii, Kansas Quart. viii; *A. convexus*, *cydoniæ*, *camelliæ* and others, complex synonymy, MARLATT, pp. 208–211, Canad. Ent. 1899; *A. lataniæ*, characters; *A. transparens* a distinct species, GREEN, p. 181, Ent. Mag. 1899; *A. trilobitiformis* = (*darutyi* Charm.), COCKERELL, p. 312, Psyche viii; *A. jatrophæ* var. n. *parrotti*, NEWELL, p. 23, Contr. Zool. Ent. Iowa Coll. No. 3; *A. aloës* var. n. *simplex*, p. 20, *A. articulatus*, var. n., *simplex*, p. 21, CHARMOY (209); *A. duplex* var. n. *pæoniæ*, COCKERELL, p. 105, Canad. Ent. 1899; *A. fernaldi* subsp. n. *cockerelli*, PARROTT, pp. 10 & 11, t. c.; *A. perniciosus*, RATHAY (955); *A. perniciosus*, account of in German,

WASMANN (1210); *A. perniciosus*, native home, WEBSTER, p. 55, Rep. ent. Soc. Ontario, xxx; *A. perniciosus* var. *eucalypti*, FULLER, p. 465, Tr. ent. Soc. London 1899; *A. perniciosus*, *ancylus*, *camelliæ*, larval distinctions, MAY, pp. 151–153, Mt. Mus. Hamburg xvi 2; *A. ostreæformis*, account of, MARLATT, pp. 76–82, figg. 1–4, Bull. U. S. Dep. Agric. Ent. No. 20; *A. ostreæformis* in N. America, MARLATT, pp. 18–20, Science x; *A. yuccæ* var. n. *ncomexicanus*, COCKERELL & PARROTT, p. 278, Industrialist 1899.

A. (*Diaspidiotus*) *tesseratus*, Mauritius, CHARMOY, p. 23 (209); *A. dryandræ*, pl. xv, fig. 41, *niveus*, W. Australia, FULLER, p. 465, Tr. ent. Soc. London 1899; *A.* (*Targionia*) *gutierreziæ*, New Mexico, COCKERELL & PARROTT, p. 277, Industrialist 1899; *A.* (*Diaspidiotus*) *hunteri*, Texas, NEWELL, p. 10, Contr. Zool. Ent. Iowa Coll. No. 3; *A. cueroensis*, Texas, COCKERELL, p. 105, Canad. Ent. 1899; *A.* (*Targionia*) *helianthi*, Kansas, PARROTT, p. 176, t. c.; *A.* (*Targionia*) *marlatti*, Kansas, PARROTT, p. 282, t. c.; *A.* (*Diaspidiotis*) *subsimilis*, *A.* (*Hemiberlesia*) *cupressi*, Mexico, COCKERELL, Ann. Nat. Hist. iii; *A. vagabundus*, p. 20, *lucumæ*, p. 22, *tesseratus* (de Charmoy), p. 24, Mexico, COCKERELL, Biol. Centr.-Amer. Rhynch. Homopt. ii, 2 : n. spp.

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Asterolecanium hakeæ, *petrophilæ*, W. Australia, FULLER, p. 456, t. c., n. spp.

Brachyscelinæ remodelled by removal of *Apiomorpha*, FULLER, p. 461, t. c.

Callipappus farinosus, p. 437, pl. xv, fig. 1, *bufo*, p. 438, fig. 2, W. Australia, FULLER, t. c. n. spp.

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C. albiziæ, p. 115, pl. xxxiv, *mussaendæ*, p. 117, pl. xxxv, *rhododendri*, p. 119, pl. xxxvi, *scrobicularum*, p. 121, pl. xxxvii, *arundinariæ*, p. 127, pl. xl, *permutans*, p. 130, pl. xlii, *herbæ*, p. 132, pl. xliii, *polygoni*, p. 134, pl. xliv, *hedyotidis*, p. 142, pl. xlviii, *litzeæ*, p. 144, pl. xlix, *varicosa*, p. 146, pl. l, *dilatata*, p. 148, pl. li, *megaloba*, p. 149, pl. lii, *flava*, p. 150, pl. liii, *fodiens*, p. 155, pl. lv, *galliformens*, p. 158, pl. lvi, *simplex*, p. 160, pl. lvii, Ceylon, GREEN, Coccidæ, Ceylon; *C. madiunensis*, *tegalensis*, spec. v, Java, ZEHNTNER (1241); *C. agonis*, *ethelæ*, p. 471, *xanthorrhœæ*, p. 472, W. Australia, FULLER, Tr. ent. Soc. London 1899; *C. corni*, p. 15, pl. ii, fig. 1, *longiloba*, p. 16, fig. 2, N. America, *stanotophri*, S. Africa, p. 35, pl. iii, fig. 7, *platani*, p. 36, pl. iii, fig. 2, N. America, COOLEY, special Bull. Hatch exp. Stat. : n. spp.

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Gymnococcus ruber, New Mexico, COCKERELL & PARROTT, p. 162, Industrialist 1899, n. sp.

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Pulvinaria, measurements of species, COCKERELL, pp. 272 & 273, P. Ac. Philad. 1899; measurements of legs and antennæ, COCKERELL & PARROTT, p. 281, Industrialist 1899; *P. pyriformis*=(*newsteadi* Leon.), COCKERELL, p. 311, Psyche viii; *P. maskelli* var. n. *viminariæ*, FULLER, p. 458, Tr. ent. Soc. London 1899.

P. cariei, Mauritius, CHARMOY, p. 41 (209); *P. paradelpha*, Australia, COCKERELL, p. 15, Victorian Natural. xvi; *P. phaiæ*, N. America (? imported from Japan), LULL, p. 237, figg., Ent. News Philad. x; *P. cockerelli*, N. America, KING, p. 417, Psyche viii; *P. parvula*, Mexico, COCKERELL, p. 19, Biol. Centr.-Amer. Rhynch. Homopt. ii 2 : n. spp.

Pulvinella n. subg. of *Pulvinaria*, for *P. pulchella*, n. sp., Brazil, HEMPEL, p. 132, Canad. Ent. 1899.

Pseudoleucanium and allies, characters, COCKERELL, p. 263, P. Ac. Philad. 1899.

Rhizococcus tripartitus, W. Australia, FULLER, p. 443, pl. xv, fig. 11, Tr. ent. Soc. London 1899; *R. lidgetti*, Australia, COCKERELL, p. 88, Victorian Natural. xvi : n. spp.

Ripersia lasii, habits, COCKERELL, p. 312, Psyche viii.

R. minimus, Massachusetts, TINSLEY & KING, p. 57, Ent. News Philad. x; *R. arizonensis*, p. 5, Arizona, *villosa*, California, p. 6, EHRHORN, Canad. Ent. 1899 : n. spp.

Schizochlamidia, n. g., COCKERELL, p. 333, Canad. Ent. 1899.

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Sphærococcopsis n. g. type *Sphærococcus inflatipes* Mask., COCKERELL, p. 262, P. Ac. Philad. 1899.

Sphærococcus leaii, pl. xv, fig. 21, p. 448, *tepperi*, fig. 16, *ethelæ*, fig. 20, p. 449, *tormentosus*, fig. 18, *morrisoni*, fig. 22, p. 450, with var. *elongata*, fig. 23, p. 451, W. Australia, FULLER, Tr. ent. Soc. London 1899, n. spp.

Tachardia australis, Australia, FROGGATT, p. 1160, Agric. Gaz. N. S. W. x, n. sp.

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Trionymus n. n. for *Signoretia* Kraatz nec Stål, BERG, Comun. Mus. Buenos Aires i, p. 78.
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Xerophilaspis, is nearer to *Aonidia* than *Aspidiotus*, COCKERELL, p. 27, Biol. Centr.-Amer. Rhynch. Homopt. ii 2.

ANOPLURA.

Account of *Anoplura*, SHARP (1068), pp. 599–601.

(F.) *NEUROPTERA.*

TRICHOPTERA.

[*Cf.* KLAPÁLEK (666), McLACHLAN (805), OSTWALD (879), STRUCK (1129).]

Cases of numerous European species, STRUCK (1129).
Experiments on case-building of the larvæ, OSTWALD (879).
Notes on the characters of various Hungarian species, KLAPÁLEK, pp. 429–438, pls. xviii & xix, Termes. Fuzetek xxii.
Limnophilus scalenus, characters, emergence from pupa, McLACHLAN, p. 29, Ent. Mag. 1899.
Asynarchus productus, ♀ characters, McLACHLAN, p. 29, t. c.
Philopotamus montanus var. *chrysopterus*, note, MORTON, p. 157, t. c.
Plectrocnemia minima, Hungary, KLAPÁLEK, p. 436, Termes. Fuzetek xxii, n. sp.

NEUROPTERA-PLANIPENNIA.

[*Cf.* BANKS (63, 64), BERG (84), CALVERT (183), CURRIE (264), KLAPÁLEK (666), LURIÉ (775), McLACHLAN (804, 806, 807), PERKINS (897).]

SIALIDÆ.

Corydalis orientalis, W. China, McLACHLAN, p. 281, pl. ix, Tr. ent. Soc. London 1899, n. sp.

HEMEROBIIDÆ and MANTISPIDÆ.

Natural history and anatomy of *Chrysopa*; apparently an important paper, in Russian, LURIÉ (775).
The N. American genera of *Myrmeleonidæ*, BANKS (63).
Hemerobiidæ of the Hawaiian Isles, PERKINS, pp. 36–62, Fauna Hawaiiensis ii.
The *Mantispidæ* of Argentina, BERG (84).
Acanthaclisis hageni, Arizona, BANKS, p. 170, Ent. News Philad. x, n. sp.
Anomalochrysa princeps, pl. iii, fig. 1, p. 47, *molokaiensis*, *sylvicola*, fig. 2, *debilis*, *peles*, p. 49, *angulicosta*, fig. 3, *cognata*, p. 50, *viridis*, fig. 4, *soror*, p. 51, *frater*, *nana*, p. 52, *paurosticta*, *longipennis*, fig. 5, p. 53, *decepta*, fig. 6, p. 54, *simillima*, p. 55, *gayi*, fig. 7, *zoe*, p. 56, *raphidioides*, fig. 8, *reticulata*, p. 57, *biseriata*, fig. 9, *hæmatura*, p. 58, *proteus*, figg. 11–13, p. 59, *fulvescens*, figg. 14–16, *rhododora*, p. 60, with var. *xerophylla*, p. 61, Hawaiian Isles, PERKINS, Fauna Hawaiiensis ii, n. spp.
Brachynemurus tuberculatus, male, CURRIE, p. 361, Canad. Ent. 1899.

B. maculosus, California, p. 170, *pallidus*, Arizona, p. 171, BANKS, Ent. News Philad. x; *B. tuberculatus*, New Mexico, BANKS, p. 70, Canad. Ent. 1899; *B. papago*, p. 361, *pusillus*, p. 363, N. America, CURRIE, t. c. : n. spp.

Calinemurus n. g. for part of *Brachynemurus*, BANKS, p. 70, t. c.

Chrysopa polonica, Navaja Alexandria, LURIÉ, p. 84, Rabot. Lab. Warsaw 1897; *C. hungarica*, Budapest, KLAPÁLEK, p. 440, Termes. Fuzetek xxii : n. spp.

Megalomus hospes, Hawaiian Isles, PERKINS, p. 36, pl. iv, figg. 1, 2 & 16, Fauna Hawaiiensis ii, n. sp.

Nesomicromus n. g. for *N. vagus*, pl. iv, fig. 3, p. 37, *latipennis*, fig. 4, *angustipennis*, fig. 5, p. 38, *drepanoides*, fig. 6, *paradoxus*, fig. 7, *fulvescens*, p. 39, *bellulus*, fig. 8, p. 40, *molokaiensis*, *minor*, *infumatus*, p. 41, *longispinosus*, fig. 15, *haleakalæ*, p. 42, *brunnescens*, fig. 9, *rubrinervis*, p. 43, *forcipatus*, fig. 14, *distinctus*, *subochraceus*, fig. 10, p. 44, *stenopteryx*, *minimus*, fig. 11, p. 45, n. spp., Hawaiian Isles, PERKINS, t. c.

Nesothauma n. g., p. 46, for *N. haleakalæ*, n. sp., Maui, pl. iv, fig. 13, p. 47, PERKINS, t. c.

Hemerobius: the specific distinctions and male characters of various palæarctic species, MCLACHLAN (806).

H. mortoni, Europe, MCLACHLAN, p. 79, Ent. Mag. 1899, n. sp.

Palpares, 3 spp. noticed and figured, CALVERT, p. 243, pl. x, figg. 1–3, P. Ac. Philad. 1899.

Psammoleon n. g. for *Myrm. ingeniosus* Walk., BANKS, p. 69, Canad. Ent. 1899.

Pseudopsectra n. g. for *P. lobipennis*, n. sp., Hawaiian Isles, pl. iv, fig. 12, PERKINS, p. 46, Fauna Hawaiiensis ii.

Stenosmylus stellæ, with var. *connexus*, New Zealand, MCLACHLAN, p. 259, Ent. Mag. 1899, n. sp.

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MALLOPHAGA.

[*Cf.* KELLOGG (627), KELLOGG, CHAPMAN & SNODGRASS (628).]

Classification of Mallophaga, families and subfamilies, key to genera, list of N. American species with their hosts, KELLOGG (627).

The anatomy of Mallophaga, SNODGRASS (628).

Mallophaga from birds of Alaska, California, Lower California and Panama, KELLOGG & CHAPMAN (628).

Colpocephalum abboti, Baja California, on *Larus*, p. 36, pl. iv, fig. 9, *spineum*, Panama, on *Fregata*, p. 38, pl. iv, fig. 1, *diffusum*, Panama on various birds, p. 40, figg. 3 & 4, KELLOGG, Contr. Hopkins Lab. xix; *C. perplanum*, on *Lunda*, p. 109, pl. vii, fig. 8, *grandiculum*, on *Pipilo*, p. 113, fig. 10, KELLOGG & CHAPMAN, t. c. : n. spp.

Docophorus rufus, on *Myiarchus*, Baja California, p. 7, pl. i, figg. 6 & 9, *panamensis*, on *Phœnicothraupis*, Panama, p. 9, pl. i, fig. 1, *rutteri*, Alaska, on *Parus*, KELLOGG, t. c.; *D. procax*, on *Cephus columba*, p. 54, *validus*, on *Puffinus*, p. 56, pl. v, fig. 2, *singularis*, on *Dryobates*, p. 61, fig. 5, *mirinotatus*, on *Junco*, p. 65, fig. 6, *mirus*, on *Thyrophorus*, p. 67, fig. 7, California, KELLOGG & CHAPMAN, t. c. : n. spp.

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THYSANOPTERA.

[*Cf.* BUFFA (160), DEL GUERCIO (502), MATSUMURA (797), TRYBOM (1148, 1149).]

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[*Cf.* COOK (246), SILVESTRI (1074, 1075), VIRÉ (1178).]

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[*Cf.* ABSOLON (3, 4), BANKS (65), CARL (193, 194), CARPENTER & EVANS (196), FOLSOM (408, 409), LUBBOCK (768), STSCHERBAKOW (1130, 1131), WAHLGREN (1181, 1182).]

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(H.) *ORTHOPTERA.*

[*Cf.* BERG (85), BOLIVAR (117–121), BORDAGE (124A–129), BOUTAN (143) BRUNER (153), BURR (163–171), COMSTOCK & NEEDHAM (244), DOMINIQUE (303), EDES (333), FABRE (351), FRITZE (434), GIARDINA (471), GRIFFINI (490, 491), HANCOCK (513, 514), HEYMONS (537), HUTTON (582–584), KIRBY (648–651), KRAUSS (723), MCNEILL (809, 810), MORSE (853, 854), NAVÁS (858, 859), PERKINS (896), PETRUNKEWITSCH (899), RODZIANKO (994), ROSSIKOW (999), ROUSSEAU (1005) SAUSSURE (1016), SAYCE (1017), SCHULTHESS (1026), SCUDDER (1043–1050, 1053), SELYS (1056), SHARP (1067), SINETY (1076), TUTT (1159).]

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Temnopteryx abyssinica, p. 576, *caffra*, p. 577, Africa, SAUSSURE, t. c.; *T. variegata*, Delagoa, SCHULTHESS, p. 191, pl. viii, fig. 1, Bull. Soc. Vaudoise xxxv : n. spp.

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Acanthomantis rendalli, Africa, KIRBY, p. 352, Ann. Nat. Hist. iv, n. sp.
Entella jucunda, S. Africa, SAUSSURE, p. 595, Abh. Senckenb. Ges. xxi, n. sp.
Galinthias hyalina, Delagoa, SAUSSURE, p. 598, t. c. n. sp.
Harpagomantis n. n. for *Harpax* Serv. nec Park, KIRBY, p. 352, Ann. Nat. Hist. iv.
Hierodula voelzkowiana, Aldabra, p. 591, ootheca, pl. xxxvii, figg. 2–4, SAUSSURE, Abh. Senckenb. Ges. xxi; *H. brevipennis*, Delagoa, SCHULTHESS, p. 193, pl. viii, fig. 3, Bull. Soc. Vaudoise xxxv : n. spp.
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Miomantis saussurei, S. Africa, p. 195, *senegalensis*, p. 196, Senegal, SCHULTHESS, Bull. Soc. Vaudoise XXXV, n. spp.
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Sibylla mortuifolia, Trop. Africa, SAUSSURE, pp. 597 & 659, t. c. n. sp.
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Tropidomantis thalassina, Nossi-Bé, SAUSSURE, p. 593, Abh. Senckenb. Ges. XXI, n. sp.

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Agathemera crassa=(*Paradoxomorpha bruchi* Brancsik), variability, *A. pardalina* Westw.=(*Anis. variegata* Phil.), characters, BERG, pp. 181–186, Comun. Mus. Buenos Aires i.
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Maransis rufolineatus, Delagoa, SCHULTHESS, p. 200, pl. vii, fig. 4, Bull. Soc. Vaudoise XXXV, n. sp.
Olcyphides n. n. for *Phocylides* Stål, GRIFFINI, p. 90, Zool. Anz. 1899.
Pachymorpha salebrosa, p. 52, *acornuta*, p. 53, New Zealand, HUTTON, Tr. N. Zealand Inst. XXXI, n. spp.

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Ectatoderus voeltzkowi, Nossi-Bé, SAUSSURE, p. 605, pl. XXXVII, fig. 8, t. c. n. sp.
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Nemobius maculosus, Nossi-bé, SAUSSURE, p. 600, Abh. Senckenb. Ges. xxi, n. sp.

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Œ. parvulus, Aldabra and Nossi-Bé, SAUSSURE, p. 613, Abh. Senckenb Ges. xxi, n. sp.

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Acanthoproctus howarthæ, S. Africa, KIRBY, p. 145, t. c. n. sp.

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Aphractia n. n. for *Enyalius* Stål, KIRBY, p. 146, Ann. Nat. Hist. iii.

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Nomotettix acuminatus, Kansas, HANCOCK, p. 8, t. c.; *N. sinufrons*, Minnesota, HANCOCK, p. 278, t. c. : n. spp.

Oeonomus n. g. *Orphulæ*, for *Oe. altus*, n. sp., California, SCUDDER, P. Amer. Ac. xxxv, p. 47.

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Parathericles n. g. for *P. elephantulus*, n. sp., San Thomé, BURR, p. 293, An. Soc. Espan. xxviii.

Paratylotropidia brunneri, characters, MCNEIL, Psyche viii, p. 334.

Paropomala n. g. near *Pseudopomala*, for *P. calamus virgata*, n. spp., N. America, SCUDDER, p. 436, Psyche viii.

Penichrotes brunneri, E. Africa, BURR, p. 280, An. Soc. Espan. xxviii, n. sp.

Phaulotypus n. g. *Chærotypi*, for *P. granti*, n. sp., Socotra, BURR, p. 44, Bull. Liverp. Mus. ii.

Phyllochoreia equa, p. 301, *asina*, p. 302, Ceylon, BURR, An. Soc. Espan. xxviii, n. spp.

Plagiotriptus insularis, Socotra, BURR, p. 44, Bull. Liverp. Mus. ii; *P. rotundifrons*, E. Africa, BURR, pl. 103, An. Soc. Espan. xxviii : n. spp.

Pseudoceles n. g. near *Celes*, for *P. œdipodioides*, n. sp., Asia Minor, FAUST, p. 593, Ann. Soc. ent. Belgique 1899.

Pseudothericles n. g., type *Thericles compressifrons* St., p. 282, *P. bolivari*, n. sp., Anchieta, p. 284, BURR, An. Soc. Espan. xxviii.

Schinzia horrida, Africa, SAUSSURE, p. 649, pl. xxxviii, figg. 39 & 40, Abh. Senckenb. Ges. xxi, n. sp.

Schistocerca, monograph, SCUDDER, pp. 441–476; *australis* n. n. for *Acr. occidentale* Scudd., p. 459, P. Amer. Ac. xxxiv.

Schistocerca gracilis, S. America, p. 447, *aurantia*, Mexico, p. 448, *carinata*, N. America, p. 449, *crocotaria*, Nicaragua, *interrita*, Peru, p. 450, *camerata*, p. 451, *mellea*, p. 452, *zapoteca*, p. 453, *pyramidata*, p. 454, Mexico, *desiliens*, p. 455, *infumata*, p. 457, Brazil, *æqualis*, Demerara, *maya*, Mexico, p. 458, *gulosa*, Demerara, p. 459, *bogotensis*, Colombia, p. 460, *idonea*, Brazil, p. 461, *sonorensis*, Mexico, p. 463, *lineata*, p. 465, *venusta*, p. 467, N. America, *mexicana*, Sinaloa, p. 468, *separata*, Nicaragua, p. 469, *obliquata*, Mexico, p. 470, *perturbans*, Brazil, p. 471, SCUDDER, t. c. n. spp.

Scirtotypus greeni, Ceylon, BURR, p. 100, An. Soc. Espan. xxviii, n. sp.

Stenobothrus curtipennis=(*coloradensis* McN.), SCUDDER, p. 50, P. Amer. Ac. xxxv.

S. oregonensis, N. America, id. l. c.; *S. zubowskyi*, Asia Minor, BOLIVAR, p. 588, Ann. Soc. ent. Belgique 1899 : n. spp.

Stirapleura, amended characters, SCUDDER, p. 51, P. Amer. Ac. xxxv.

S. pusilla, p. 52, *tenuicarina*, p. 53, N. America, id. t. c. n. spp.
Symbellia n. g. *Eumastacides*, for *S. biplagiata*, Asmara, p. 286, *karschi*, Nossi-Bé, p. 287, n. spp., BURR, An. Soc. Espan. xxviii.
Taphronota rostrata, p. 645, *subverrucosa*, p. 646, Trop. Africa, SAUSSURE, Abh. Senckenb. Ges. xxi, n. spp.
Tettix morsei, N. America, HANCOCK, p. 280, Ent. News Philad. x; *T. tentatus*, *hancocki*, p. 200, *crassus*, p. 201, N. America, MORSE, J. N. York Ent. Soc. vii : n. spp.
Thaumastax n. g., p. 299, for *T. monstrum*, n. sp., Colombia, p. 300, BURR, An. Soc. Espan. xxviii.
Thrincotropis n. g. near *Schinzia*, p. 649, for *T. caffra*, n. sp., Natal, p. 652, pl. xxxviii, figg. 43–48, SAUSSURE, Abh. Senckenb. Ges. xxi.
Truxalis ensis, Socotra, BURR, p. 43, Bull. Liverp. Mus. ii, n. sp.
Tylotropidius gaugeri, Africa, SCHULTHESS, p. 309, Bull. Soc. Vaudoise xxxv, n. sp.
Zonocerus hova, Madagascar, SAUSSURE, p. 643, Abh. Senckenb. Ges. xxi, n. sp.

XIV. ECHINODERMA.

BY

F. A. BATHER.

CONTENTS.

INTRODUCTION.

I. Titles. The numbered entries in the following list amount to 268, a total which would have been increased had certain translations and republications received numbers, but which, even as it is, overtops the 1898 list by 36 and the previous maximum (of 1891) by 81. The total is thus made up: 1876, 1; 1877, 1; 1878, 1; 1889, 3; 1890, 1; 1891, 1; 1892, 1; 1893, 2; 1894, 2; 1895, 3; 1896, 5; 1897, 6; 1898, 31; 1899, 207; and 1900, 3. The magnitude of the total depends, then, less on the discovery of previous omissions than on the particularly large number of entries pertaining to the year of which this is professedly the record. It is of interest to compare this with the output, as now known, of the preceding years of the decade: 1891, regarded by its Recorder, Mr Minchin, as an exceptionally fertile year, has yielded 178 works; 1892, 164; 1893, 161; 1894, 152; 1895, 163; 1896, 193; 1897, 182; 1898, 198; and, since each of these totals is larger by about 28 than the number originally recorded, we might safely credit the last of the eighteen hundreds with no less than 235 writings relating in whole or part to Echinoderma. This does not take into account some 160 reviews, abstracts, and translations, many of them signed by writers of eminence, and all recorded, though not separately numbered, in the following list. It is of course hoped that the increased numbers may be due in part to the increased experience of the Recorder, as they are in part to the improvement and growth of the

great libraries, and in even larger part to the generosity and kindly help of fellow-workers who enable the Recorder to deal with much matter that he would otherwise see with great difficulty or not at all. None the less there does seem to be an actual growth of interest in Echinoderma and an absolute increase in the publications that refer to them. Partly this is due to the rise of experimental embryology, which has some of its most tractable material provided by starfish and sea-urchins. Partly it may be that geologists now find it easier to employ both crinoids and echinoids as stratigraphical counters, thanks to the labours of palæontological systematists. Contributions to such outlying branches of the subject, though often of deep significance for the pure specialist in Echinoderms, and therefore rightly recorded here, might in some more philosophical classification of the sciences be far removed from writings descriptive of these animals. But even were this annual Record confined to Echinoderma in their morphographic and taxonomic aspects, its growth would still be apparent; despite the attractions of experimental and mathematical biology, the energy of anatomist and systematist is unabated.

The entries of early date in the present list have been furnished by two important publications hitherto inaccessible, but now visible at the Natural History Museum, London. These are Memorie della Pontificia Accademia dei Nuovi Lincei, and Anales de la Real Academia de Ciencias ...de la Habana. The three entries from 1900 were included before their correct date was ascertained; others originally included have been relegated to that year's Record, and should perhaps have been accompanied by yet others. The private distribution of a few reprints, undated or even wrongly dated, before the definitive publication, is responsible for most of this confusion. Reprints are the blessing of the specialist, but when their bibliographic indications are not merely imperfect but misleading, one is apt to regard them as a curse (see Nature lxi, p. 367, 15 Feb. 1900, and Science xi, p. 231, 9 Feb. 1900). The fault is nearly always the printer's, and the remedy lies with the editor. The editor would also do well to exercise his powers in the case of misleading titles. Who would expect to read about sea-urchins in a memoir on "La faune entomologique du Delagoa," even in an appendix, entitled "Mollusques recueillis au Delagoa"? And if a new name for an Echinoid genus is proposed under the head of "Notes sur *Terebratella*," it seems almost a mercy that it is born a synonym.

II. Biology. A. The flow of speculation that compares Echinoderm larvæ with supposed ancestors of the *Chordata*, continues undisturbed (Masterman 168, 169, Willey 255, MacBride 165), but seems to mean little more than that *Chordata* and *Echinoderma*, and perhaps other Phyla, were independently derived from a group of primitive *Cœlomata*. The view that the chief peculiarities of Echinoderm structure are due to the early intervention of a sessile stage is supported by MacBride (165), Steinmann (223), and Bather (22); but while Bather ascribes to this stage the essential characters of the *Pelmatozoa*, MacBride supposes that the division of the Echinoderm stem into the two great branches (*Pelmatozoa* and *Eleutherozoa* of Bather, *Microphagi* and *Megophagi* of Sollas, 216) took place before the *Pelmatozoa* had been definitely evolved. The difference of view is not great, and at any rate the embryologist and palæontologist agree in recognising a division between the two branches so broad that it precludes the homologies required by the calycinal theory of Lovén & Carpenter.

The speculations of Sollas (216) are chiefly concerned with the homologies of the buccal armature, which structure he has found well-developed in two Silurian Echinoids often supposed to have Cystid affinities. He also thinks that he has found in them an inner and an outer series of ambulacral plates [=flooring-plates and covering-plates], of which the

inner series corresponds to the ambulacrals of Asteroids. If the observations are correct, then *Palæodiscus* and *Echinocystis* combine what seem to be food-grooves of Pelmatozoan character with a mouth that is not merely Eleutherozoan in position, but provided with well-developed Echinoid jaws. The position seems a difficult one, but is perhaps fortified by the work of JAEKEL & BATHER on *Edrioasteroidea* (*Thecoidea* Jkl.), and is consistent with the above-mentioned view that the Eleutherozoa had a Pelmatozoan ancestry.

The work of JAEKEL (130) on the phylogeny of the *Pelmatozoa* is the largest contribution of the year, and in its combination of philosophic boldness with accuracy in detail, exhaustive treatment with beauty of illustration, it is also the most important. Comparison of its conclusions with those of BATHER (22) shows so many points of agreement as to warrant the belief that a solid advance has been made in our knowledge of the *Cystidea*; at the same time the divergences of opinion between these authors, not to mention HAECKEL, are so profound that it is clear much has yet to be learned. There seems, however, no doubt that the *Edrioasteroidea* should rank as a distinct Class, and nothing but practical convenience has caused their retention with the *Cystidea*, in the present Record. The two great Orders of *Cystidea*, the *Rhombifera* (*Dichoporita* Jkl.) and the *Diploporita*, also seem to be well founded, though doubt still exists as to certain genera classed as *Amphoridea*, *Aporita*, *Carpoidea*, and *Protoblastoidea*. In their views as to the relations of the *Crinoidea* these writers are also at variance, JAEKEL separating the Camerate families as *Cladocrinoidea*, supposed to be quite independently evolved from many-plated Cystids, while BATHER divides them, along with the other crinoids, into forms with a monocyclic, and forms with a dicyclic, base, and regards the Camerata in each division as evolved from the Inadunata.

Among minor evolutionary studies, attention should be directed to ROWE's paper on the *Micraster* in the Chalk of S.E. England (202); only by work of this kind can the true nature of species be understood.

B. Turning to the morphology of the classes, we find RUSSO (204) laying stress on a point already led to its logical conclusion by HAECKEL, namely the homology of the single Holothurian gonad with the lower single portion of the genital rachis in *Crinoidea*; but the attempt to represent this by classificatory names is presumably not intended as a serious contribution to taxonomy. The primitive nature of the single gonad may be inferred from the *Cystidea*, which also show that the madreporite was primitively a single pore, *pace* WILLEY (255). Minor notes on *Synapta* are contributed by CLARK (57), while BORDAS' studies on the generative organs and respiratory trees of *Holothuria* appear in their final form (43, 44). Under *Echinoidea* there is nothing remarkable beyond the work of SOLLAS (216) already referred to. The account of *Asteroidea* in 'Bronn's Thierreich,' begun by LUDWIG, is completed by HAMANN. LÜTKEN & MORTENSEN have discovered curious pores on the arms of *Ophioderma*; but among *Ophiuroidea* the most interesting work is that of SOLLAS (216) on the Silurian *Eucladidæ*, which are found to have neither the arm-structure, nor the orientation assigned to them by GREGORY. A study of some Jurassic crinoids has suggested to BIGOT (39) valuable remarks on the pseudo-monocyclic base. BATHER (24) brings additional facts and arguments to bear on the homologies of the anals in *Crinoidea*, which structures are discussed by SARDESON (207) from a more novel point of view. The anatomy of *Cystidea* and *Edrioasteroidea* receives abundant elucidation at the hands of JAEKEL (130) who deals with the cœlom, hydrocœl, gut, nervous system, gonads, etc., despite the dictum of MACBRIDE that "of the internal structure of Cystids we know next to nothing."

The notes on variation scattered through the literature are as numerous

as ever, but the only definite study of a case is that by KERFORNE (134), see II, B, ii, d, *1*.

C. The true functions of the pedicellariæ seem at last to have been determined by UEXKÜLL (234, see under III, D, v, a), who presents the results of his physiological studies in an exhaustive paper; the fact that a pedicellaria will not grip on to a portion of a sea-urchin of the same species is termed 'autodermophily,' and ascribed to an actual substance in the skin. The same author investigates the movements of the Echinoid spine (235). An interesting study of the curious power that Holothurians have of distilling their skin "almost to jelly with the act of fear" has been made by LINDEMANN (146), whose observations agree with those of SCHOENLEIN (210) on muscular tonus. A very interesting and valuable paper on the bionomics and physiology of *Synapta* is that by CLARK (57).

D. LO BIANCO's notes (147) on the animals of the Bay of Naples, though dealing chiefly with the breeding period, contain much of interest in general bionomics. Similar information is given in ALLEN's account (8) of the fauna of a tract in the English Channel. As usual this section of the Record indexes a large amount of very varied information, often gleaned from the most unpromising sources. MEAD's report on *Asterias*, though strictly practical and economic, contains interesting notes on bionomics, regeneration, and reproduction; it is curious to learn that a starfish can live without a madreporite for at least five months, while the induction from a long series of experiments, that the arms alone cannot regenerate the disc, and that a starfish torn in half does not become two starfish, is of no less scientific than practical importance. The notes in the rest of the Rhode Island report are worthy of attention (218, 219), as also is the cognate paper by FIELD (86).

F. The structure of Echinoderm ova and spermatozoa is of interest to the general biologist rather than to the specialist on Echinoderms. Turning to Embryology we find GOTO's conclusions from *Asterias pallida* criticised by MACBRIDE (164), but to some extent confirmed by GRAVE (110), whose account of the early development of *Ophiura* raises many important questions. The note by MACBRIDE (166) on the early development of *Echinus* makes one hope that the full account will not be long in coming. A serious study of the post-larval growth-stages of Ophiuroids has been entered on by LUDWIG (159), and seems at first sight to support the calycinal theory. JACKSON's interesting memoir (127), arising out of his work on the post-larval growth-stages of Echinoids, brings facts from many animals and plants to illustrate 'localized stages in development,' which appear to be the same as the 'stages of individual morphogenesis' of BUCKMAN & BATHER, Zool. Anz. 1892.

The experimental work on Echinoderm ova tends to show that segmentation results from the addition to the ovum of some unorganized substance, whether an enzyme or merely certain ions. The sensational results of LOEB (150, 152) have, however, been criticised by MORGAN (178). Akin to these studies are the observations of VERNON (240) on the effect of staleness of the gonads.

III. A. The evidence of Echinoderms is marshalled against the bipolar hypothesis by ORTMANN (187) & THOMPSON (230). Faunal studies are numerous; for Scandinavia see NORDGAARD, BIDENKAP, & LÖNNBERG; for a portion of the English Channel, the exhaustive paper by ALLEN (8); for the Adriatic, CONDORELLI (61); for the W. Indies, SONTHONNAX (217), ARANGO Y MOLINA (19), CLARK (56), & VERRILL (244); for the Zanzibar region, LUDWIG (158); for Funafuti, BEDFORD (29), BELL (33), & HEDLEY (118A). HÉROUARD (120, 121) & R. PERRIER (191) describe Atlantic Holothurians; VERRILL (243) deals with Atlantic *Asteroidea*; KOEHLER (142) publishes the complete figures of the deep-sea Ophiuroidea of the Indian

Ocean; LÜTKEN & MORTENSEN (162) describe those of the E. Central Pacific.

III. B. Among studies of fossil faunas the most important are the writings of AIRAGHI (2, 3, 4) on the Tertiary *Echinoidea* of N. Italy, of ANTHULA (18) on the Senonian of the Caucasus, of FOURTAU (96) on the *Echinoidea* of Egypt, of GRABAU (107, 108) on the palæontology of a Devonian district in New York, of WAAGEN and JAHN (246) on the Palæozoic crinoids of Bohemia, and of WHIDBORNE (250) on the Devonshire fossils, which, though assigned to a Middle Devonian age, have a remarkably Carboniferous aspect. The discovery of a Silurian starfish in New South Wales is published by ETHERIDGE (83). Pre-Cambrian Echinoderms appear in the Record for the first time (MATTHEW, 170). The great work of LÓCZY (149) does not contain much of interest to the echinologist, but should not be allowed to escape the attention of the general palæontologist.

IV. Allusion has already been made to several works dealing with the broader questions of Taxonomy, such as the rehabilitation of *Edrioasteroidea* as a Class by JAEKEL (130, s. v. *Thecoidea*) and BATHER (22), the general phylogenetic classification of the Pelmatozoa, with numerous new Orders, Sub-orders, and Families, by the latter author, and the important systematic monograph of *Cystidea* and *Thecoidea* by the former, the proposal of a new Order of Ophiuroids—the *Ophiocistia*, by SOLLAS (216), who also treats other classificatory questions from a broad and novel standpoint. Here also may be mentioned the attempt of SARDESON (207) to connect the crinoids with the cystids by way of *Carabocrinus* and his new genus *Strophocrinus*. The system of *Holothurioidea* receives accessions from R. PERRIER (191) and HÉROUARD (120, 121), and partial revision from the latter and from CLARK (57). On *Echinoidea*, LAMBERT and GAUTHIER continue to publish valuable notes, while the latter author has materially assisted FOURTAU (96) in his revision of the fossil echinoids of Egypt. KOEHLER (141) and SCHLUETER (209) approach the genus *Echinocardium* or *Amphidetus* from opposite quarters. YOSHIWARA (259) adds further to our knowledge of the fossil urchins of Japan, while some interesting Palæozoic Echinoids are made known by SOLLAS (216) and WHIDBORNE (250). In this group, however, the paper of fundamental importance is that by ROWE (202) already alluded to. Under *Asteroidea* we find extensive revisions by GREGORY (111) on Palæozoic and VERRILL (243) on Recent genera; but it is clear that the classification of SLADEN (whose loss zoology so greatly deplores) will have to be modified before it can accommodate all known forms. A classification of *Ophiuroidea* is also still to seek, and no attempt to present one is made by LÜTKEN and MORTENSEN (162), who content themselves with as little disturbance of existing ideas as possible in their thorough description of the ophiurids dredged by the 'Albatross.' There is more attempt at revision, with a number of new sub-genera, in VERRILL'S paper on Bahama ophiurids (244). A new species is added by KOEHLER to the re-issue of his report on the deep-sea ophiurids dredged by the 'Investigator,' but one would like to know whether certain other changes, duly noted in this Record, are due to intention or to the fact that the author did not see proofs. Antarctic ophiurids are dealt with by LUDWIG (156), who also discusses the crinoids of the same region (157). The chief additions to be noted under *Crinoidea* are numerous new genera from the lower Palæozoic rocks of Bohemia, described by WAAGEN and JAHN (246), and numerous new species from the Devonian of S.W. England, described by WHIDBORNE (250); unfortunately nearly all these are admittedly based on unsatisfactory material. The classification of WACHSMUTH & SPRINGER receives criticism from BATHER (24) and JAEKEL (129), while the latter is responsible for a new genus of *Botryocrinida* (128). Many new species of [illegible]

some unfortunately not figured, are described in the otherwise magnificently illustrated monograph of JAEKEL (130). Two new British *Blastoidea* are described by WHIDBORNE (250), and a complete Index to the genera and species of this Class has been issued by the British Museum (26). Finally, the lists of new Echinoderms of various Classes are notably increased by the veteran P. DE LORIOL (154, 155).

The additions to our systematic lists may be analysed thus :—

	New genera	Altered generic names	New sub-genera	New species	New varieties
Holothurioidea	0	0	0	12	3
Echinoidea	7	5	0	55+1?	2
Asteroidea	17	1	0	26	1
Ophiuroidea	16	0	5+2?	75+1?	2?
Crinoidea	9	1	0	25	4
Cystidea	10	1	0	49	6
Blastoidea	0	0	0	2	0
Total	59	8	5+2?	244+2?	16+2?

The list may not be correct, and, even as it stands, contains elements of doubt, due to the extreme difficulty of deciding in some cases whether the name in question is really new, or put forward as new, and whether it is intended for a species or a variety, a genus or a sub-genus. If the author himself knows what he means, is it too much to ask that he should pass the information on to his readers? Here again is the Editor's opportunity.

This Introduction began by remarking on the quantity of literature relative to Echinoderms produced during the year 1899. The condensed and imperfect summary that has been given, shows that the quality of the work also stands at a high level.

In the following Record personal remarks by the Recorder are placed, as heretofore, in square brackets.

CORRIGENDA (in Record of Echinoderma in Vol. XXXV).

The following additions and corrections should be made in the Record for 1898 :—

p. 10. bottom of page, as No. 48 (omitted) insert DOEDERLEIN (77) of present Record.

p. 22. Nos. 174, 175 POMEL, for correct dates see under POMEL p. 26 of this Record.

p. 26. No. 221. Ami in Ottawa Nat. xiii, p. 55, gives date of issue as July, 1899, thus bringing the choice up to seven.

p. 39. III, B, ii, d & e, should be d & f.

I. TITLES.*

1. AGASSIZ, A. The islands and coral reefs of Fiji. Bull. Mus. Harvard, xxxiii, iv+168 pp., cxii pls. [III, D, iii.]

1A. AGUILERA, J. G. Sinopsis de geología Mexicana. Bol. Com. geol. Mexico, No. iv–vi, pp. 187–250. (1897.) [III, B, ii, c; iii, b, *1*, c.]

2. AIRAGHI, C. Echinidi del Pliocene Lombardo. Atti Mus. Milano, xxxvii, 357–377, 1 pl. (Jan.) [III, B, ii, c. IV, C.]
   Abstracts: in Boll. Com. geol. Ital. xxx, p. 171, 1899; by P. E. VINASSA DE REGNY, Riv. ital. Pal. iv, p. 89 (May ? 1899). Critical review by J. LAMBERT, Rev. paleozool. iii, pp. 118, 119, July (1899).

3. ——. Echinidi di Carcare, Dego, Cassinelle e dintorni. Atti Mus. Milano, xxxviii, pp. 245–251. (Aug.) [III, B, ii, d, e. IV, C.]
   This is preliminary to AIRAGHI (4).

4. ——. Echinidi del Bacino della Bormida. Boll. Soc. geol. Ital. vol. xviii, pp. 140–178, pls. vi, vii. [III, B, ii, d, e. IV, C.]
   Review by J. LAMBERT, Rev. paleozool. iv, pp. 91, 92 (April, 1900). Abstract by V[INASSA DE REGNY], Riv. ital. Pal. v, p. 69 (30 Sept. 1899).

5. ALBERT HONORÉ CHARLES (Prince de MONACO). Sur la quatrième campagne de la Princesse-Alice. C.R. Ac. Sci. cxxvi, pp. 311–314. (Jan. 1898.) [II, B, ii, c. III, A, ii.]

6. ——. Première campagne de la Princesse-Alice IIe. C.R. Ac. Sci. cxxviii, pp. 212–214. (Jan.) [III, A, v.]

7. ALBRECHT, E. Untersuchungen zur Structur des Seeigeleies. SB. Ges. Munchen, xiv, pp. 133–141. [II, F, iii.]

8. ALLEN, E. J. On the Fauna and Bottom-Deposits near the Thirty-Fathom Line from the Eddystone Grounds to Start Point. J. Mar. Biol. Ass. (n. s.) v, pp. 365–542, with 16 folding charts (being the whole of No. 4). (June.) [II, D, iii, iv, vi, viii. III, A, ii.]

9. ALMERA, J. Compte-rendu de l'excursion du 28 Septembre à Sans et à Montjuich. Bull. Soc. geol. France (3), xxvi, pp. 680–689. (Dec.) [III, B, ii, d.]
   Abstract by J. LAMBERT, Rev. paleozool. iv, p. 94 (April, 1900).

10. ——. Compte-rendu de l'excursion du jeudi 29 Septembre à Olesa, La Puda et à Montserrat. Bull. Soc. geol. France, xxvi, pp. 690–712. (Dec.) [III, B, ii, *f*.]
    Abstract by J. LAMBERT, Rev. paleozool. iv, p. 94 (April, 1900).

11. ——. Compte-rendu de l'excursion du jeudi 6 Octobre à Castelldefels et Costas de Garraf. Bull. Soc. geol. France, xxvi, pp. 801–811. (Dec.) [III, B, iii, b, *2*.]
    Abstract by J. LAMBERT, Rev. paleozool. iv, p. 94. (April, 1900.)

12. AMI, H. M. On some Cambro-Silurian and Silurian fossils from Lake Temiscaming, Lake Nipissing and Mattawa outliers. Rep. Geol. Surv. Canada (n. s.), x, pp. 289i–302i. (Sept.) [III, B, iv, g, h.]

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* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Paper or Work referred to.

The Symbols in [ ] refer to the divisions of the Subject-Index, II, III, IV. Those referring to the Systematic portion [IV, A—K] are inserted only when some question of definite importance to the systematist is dealt with in the work.

13.*ANDRES, A. L'arbero genealogico degli animali. Prolusione al corso di Zoologia ed Anatomia comparata iniziato nella R. Università di Parma. Parma; Pellegrini, 8vo, 18 pp. [II, A, ii.]

ANDREWS, E. A. See RHUMBLER (197A).

14. ANGELIS D'OSSAT, G. DE & LUZJ, G. F. Altri fossili dello Schlier delle Marche. Boll. Soc. geol. Ital. xviii, pp. 63, 64. [III, B, ii, d.]

An Appendix to ANGELIS D'OSSAT & LUZJ (9), Zool. Rec. 1897.

——. See VERRI, A. & ANGELIS D'OSSAT, G. DE (242).

15. ANON. Reports of Field Excursions. Excursion to Beverley, Walkington, etc. Tr. Hull geol. Soc. i, pp. 12, 13. (1894.) [III, B, iii, b, *1*.]

16. ——. Reports of Field Meetings. Beverley, Walkington, Little Weighton, etc. Tr. Hull geol. Soc. iii, pp. 13, 14. (1896.) [III, B, iii, b, *1*.]

17. ——. Echinoderms at the British Museum. Nat. Sci. xv, pp. 4, 5 (July.) [II, E, i, c.]

18. ANTHULA, D. J. Ueber die Kreidefossilien des Kaukasus, mit einem allgemeinen Ueberblick ueber die Entwicklung der Sedimentärbildungen des Kaukasus. Abth. I of Neue Forschungen in den Kaukasischen Ländern. Beitr. Pal. Oesterr.-Ung. xii, pp. 55–159, pls. i–xiii. [III, B, iii, b, *1*. IV, C, F.]

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[On p. 94, line 10 from end, and p. 96, lines 1 & 19, "anterior" is misprint for "posterior." Author's correction *in litt.*]
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152B. ŁOMNICKI, J. L. M. Przyczynek do znajomości fauny otwornic Miocenu Wieliczki. Additions to our knowledge of the Miocene foraminiferal fauna of Wieliczka. Kosmos polski. xxiv, pp. 220–228, pl. i. (May.) [III, B, ii, d. IV, E, *Ephipipiellum*.]

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160. ——. Echinodermen (Stachelhäuter). II Klasse. Die Seesterne. Bronn's Klassen und Ordnungen des Thierreichs, ii, Abth. 3, Lief. 22 (pars), pp. 621–623. (June.) [II, B, i, d, 7.]
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II. BIOLOGY.

(A.) EVOLUTION.

i. **General Principles**:—Regularity of structure repeatedly induced by sessile mode of life, exemplified by Echinoderma; STEINMANN (223) p. 25. See also JACKSON under II, F, i.

ii. **Relations of Echinoderma**:—to lower *Chordata*, *Enteropneusta*, etc.; grouped with *Hemichorda* as *Bilateralia*, which is not intended as a taxonomic division, also characterised as *Hydrotrema* as opposed to *Branchiotrema*; WILLEY (255) pp. 296, 297.—Relations to a supposed primitive group, *Archicoelomata*, and to the hypothetical ancestor of that group; MASTERMAN (169).—Relations of larvae to *Protochordata*; MASTERMAN (168).—Phylogeny of Animal Kingdom; ANDRES (13).

Origin of Echinoderms, "Stem cloven into two" [i.e. *Pelmatozoa* and *Eleutherozoa*], "at the very base"; MACBRIDE (165).—Light thrown by palæontology on the *Pentactaea* theory; STEINMANN (223) p. 23.

iii. **Phylogenies of smaller groups**:—General interrelations of Classes of *Echinoderma*; BATHER (22) p. 917.

Change of form in *Elpidiinæ*; HÉROUARD (121), p. 172, text-fig. 4.

Evolution of *Echinoidea* from *Asteroidea* maintained, origin of buccal armature; SOLLAS (216) p. 710.—Evolution of Cretaceous species of *Micraster*, from zone of *Rhynchonella cuvieri* to that of *M. coranguinum*; ROWE (202).—Evolutionary change of miliary granules and tubercles in *Micraster cor-anguinum* group during Senonian time; LAMBERT in FORTIN (89) p. 360.—Supposed genetic relations of Tertiary *Ech.* in northern California; MERRIAM (175) p. 165.—Evolution of *Pliolampas* and *Bothriolampas* from *Echinanthus* and *Bothriopygus* respectively; GAUTHIER in FOURTAU (96) p. 654.

Evolution of *Ast.*; HAMANN (118) pp. 740–743.

Evolution of *Pelmatozoa* and relations to other *Echinoderma*, recognition as a Sub-phylum (p. 917), Phylogeny of *Crinoidea* (p. 918); BATHER (22).—Relations of *Crinoidea* to *Cystidea*, in light of *Strophocrinus*, dual origin of *Monocyclica*; SARDESON (207) pp. 269 et sqq.

Evolution and phylogeny of *Cystidea*; BATHER (22) p. 917.—Relations of *Cystidea* (Jkl.) to other Echinoderms, and their own phylogeny (pp. 155–174), Phylogeny of *Scoliocystidæ* (p. 247), Phylogeny and relations of *Caryocrinidæ* (p. 305), Phylogeny of *Echinosphaeridæ* (p. 324), Phylogeny of *Diploporita* (p. 368), Phylogeny of *Thecoidea* (= *Edrioasteroidea*) (p. 29); JAEKEL (130).

Blastoidea, origin, relations, and principles of classification; BATHER (22) pp. 917, 918.

(B.) MORPHOLOGY.

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a. *ECHINODERMA.*

1. General accounts:—Vacant.
2. Symmetries:—Origin of radiate and esp. pentamerous symmetry; BATHER (22) p. 917.
3. Homologies of Classes:—Vacant.
4. Skeletal tissue or Stereom:—Vacant; but see (c, f, g) 4.
5. Skeletal Anatomy:—Vacant.
6. Hydrocoel &c.:—In evolution of nephridia, definite regional pores suggested as differentiation from "indefinite condition as

seen in the multiple madreporites of many Echinoderms"; WILLEY (255) p. 313.

7. Coelom and other Body-cavities:—Vacant.

8. Digestive System:—Vacant; but see b, *8*.

9. Nervous Systems:—Vacant.

10. Mesodermal tissues (exc. Skeletal):—Vacant.

11. Axial organ or Ovoid gland:—Vacant.

12. Genital System:—of *Hol.* and *Crin.* contrasted with that of *Ech.*, *Ast.*, and *Oph.*; RUSSO (204), see under IV, A.

b. *HOLOTHURIOIDEA.*

1, 2 & 3. Vacant.

4. Skeletal tissue:—Spicules of *Synapta roseola* and *S. inhaerens*, difference of size in different regions of body in *S. inhaerens*; CLARK (57) pp. 23, 24, 26, pl. xi.

5. Skeleton:—Calcareous ring of *Synapta roseola* and *S. inhaerens*; CLARK (57) p. 23, pl. xi.

6. Hydrocoel &c. Respiratory Trees:—Respiratory trees of *Holothuria* and *Stichopus*; BORDAS (43).

7. Coelom and other Body-cavities:—Ciliated funnels of *Synapta roseola* and *S. inhaerens*, size, distribution; CLARK (57) p. 24, pl. xi.

8. Digestive System:—Cuvierian organs homologous with stomachic caeca of Asteroids, their histology; RUSSO (203).

9. Nervous System:—"Otocysts" of *Synapta roseola* and *S. inhaerens*; CLARK (57) p. 28.

10 & 11. Vacant.

12. Genital System:—Anatomy and histology of generative organs of *Hol.*, esp. *Holothuria tubulosa* and *H. impatiens*; BORDAS (44).

c. *ECHINOIDEA.*

1—3. Vacant.

4. Skeletal tissue or Stereom:—Crystallography of plates of test of *Echinocorys vulgaris*, partially silicified, and of spines of undetermined Echinoid, both from Senonian of Glons, Belgium; CESÀRO (54) p. 99.

5. Skeleton:—Evolution of the following features in the test of *Micraster* in Upper Cretaceous time: interporiferous area of ambulacrum, general shape of ambulacrum, length, breadth, and height of test, elevation outline, rostrum and carina, apical system, anteal sulcus and ambital notch, position of mouth, labrum, peristome, periplastronal area, sub-anal fasciole, and minor points; ROWE (202).

Ambulacra,—compared with those of *Ast.* and *Mesocystis* (p. 706), of *Palæodiscus* (pp. 703, 705), of *Echinocystis* (p. 708 & figg. 12-14): SOLLAS (216).—Atrophy of pores in anterior ambulacrum of n. g. *Lambertia*; OPPENHEIM (186).

Buccal armature,—homologies discussed (p. 710), of *Palæodiscus* (pp. 703, 713), of *Echinocystis* (p. 707); SOLLAS (216).

Periproctal plates of *Discoides*, figd. and distinguished as 'opercular,' 'valvular,' 'central,' and 'intermediate'; LAMBERT in FORTIN (91) p. 21.—Number and distribution of genital pores in genera of exocyclic *Ech.*, especially *Plesiospatangus*; GAUTHIER (102) p. 344, text-fig. 1.

General anatomy of spines; UEXKÜLL (235) p. 74.—Pedicellariae described and figd.; UEXKÜLL (234).

6–12. Vacant.

d. *ASTEROIDEA.*

1–4. Vacant.

5. Skeleton :—Ambulacra compared with *Ech.* and *Mesocystis*; SOLLAS (216) p. 706.

Buccal armature, homologies discussed; SOLLAS (216) p. 711.

Pedicellariæ described and figd.; UEXKÜLL (234) p. 354.

6. Vacant.

7. Coelom and other Body-cavities :—Body-cavity of *Ast.* in general; HAMANN (118) pp. 623–625.—Pseudhaemal spaces, canal-system of integument, and of body-wall, general account concluded; LUDWIG (160).

8–12. Vacant; but see b, *8.*

e. *OPHIUROIDEA.*

1. Vacant.

2. Symmetries:—Orientation of *Eucladia*; SOLLAS (216) p. 692.

3, 4. Vacant.

5. Skeleton :—Hollow arm-spines of *Ophiacantha vivipara* and other *Oph.*, systematic and functional importance discussed; LUDWIG (157) p. 15.—Pores at inner edge of second ventral plate in all spp. of *Ophioderma* examined, and sometimes also at 3rd ventral plate (p. 100), pores in arm of *Ophiernus* (p. 111); LÜTKEN & MORTENSEN (162).—Arm-structure of *Eucladidæ*; SOLLAS (216) pp. 693, 696, 699.

"Outer mouth-papillæ" Lyman, called "distal oral tentacle-scales" in *Amphiuridæ* and *Ophiacanthidæ*, also apical "mouth-papillae" Lyman, called "tooth-papillae" in *Ophiacanthidæ*; VERRILL (244) pp. 3, 4.—Buccal armature of *Eucladidæ*; SOLLAS (216) pp. 692, 695, 699.

6–12. Vacant.

f. *CRINOIDEA.*

1. Vacant.

2. Symmetries :—Pentamerous and hexamerous; SARDESON (207) p. 272.

3. Vacant.

4. Skeletal tissue or Stereom :—Crystallography of columnals of *Bourgueticrinus* from Senonian of Glons; CESÀRO (54) p. 101.

5. Skeleton :—General discussion, and terms applied to Bohemian Palæozoic *Crin.* (pp. 1–9), also detailed study of *Scyphocrinus* (pp. 61–74); WAAGEN & JAHN (246) pp. 1–9.

Radials of Camerata (=Cladocrinoidea) not homologous with radials of other crinoids (=Pentacrinoidea) and should be called 'costalia'; JAEKEL (129) p. 377.—Tetramerism of Camerate base is primitive; JAEKEL (129) p. 376.—Law of Wachsmuth & Springer stated in novel form, pseudomonocyclic bases discriminated as 'crypto-dicyclic' with IBB invisible, and 'ocheto-dicyclic' with IBB obsolete, the latter stage being more common in later spp.; BIGOT (39) p. 68.—Infrabasals in some specimens of *Uintacrinus socialis*, though absent in most; SPRINGER (220).

Supposed orals of Camerata not homologous with those of *Antedon* and other Pentacrinoidea (Jkl.); JAEKEL (129) p. 378. —Tegmina of *Scyphocrinus*?; WAAGEN & JAHN (246) p. 119, pls. lxiv, xlix, lv.

Anal plates,—homologies, esp. in *Inadunata*; BATHER (24) pp. 32–44.—Discussed in light of *Strophocr.*; SARDESON (207) p. 270.

Biserial brachials not derived from uniserial, but independently developed and actually of greater geological age, pinnules of Camerata (Cladocrinoidea) not homologous with those of other crinoids (Pentacrinoidea), which latter are 'ramuli'; JAEKEL (129) p. 377.—'Dactyli' 'fingers,' new term for pinnulæ of *Cladoidea* (Jkl.); JAEKEL (130) p. 87.—Covering-plates on genital pinnules of *Antedon bidens*; DOEDERLEIN (77) p. 476.

Stem,—Origin of [nothing new]; SARDESON (206).—Of *Strophocrinus*, and origin in *Crin.* generally; SARDESON (207) p. 274. —Of Palæozoic *Crin.*, its variations and diagnostic value; WAAGEN & JAHN (246) pp. 135–140. — Of *Scyphocrinus*; WAAGEN & JAHN (246) pp. 73, 115.—Roots,—of Lower Palæozoic crinoids of Bohemia, with or without loboliths; WAAGEN & JAHN (246) pp. 189–192, pl. lxxvi, see also "*Calpiocrinus ? bohemicus.*"—Of *Strophocr.* compared with *Lichenocr.*, "the root of crinoids appears to be the counterpart of the calyx in type of symmetry"; SARDESON (207) p. 275.

6. Hydrocoel, &c.:—Stone-canal,—development in *Antedon* compared with position in *Cystidea*; JAEKEL (130) p. 102.

7–9. Vacant.

10. Mesodermal tissues, joints:—Distribution of syzygies in *Actinometra paucicirra*; DOEDERLEIN (77) p. 479.

11 & *12.* Vacant.

g. *CYSTIDEA.*

1–3. Vacant.

4. Skeletal tissue or Stereom:—Detailed discussion of, in *Cystidea* (Jkl.); JAEKEL (130) p. 70.

5. Skeleton:—Body form and anatomy of skeleton discussed in detail for *Cystidea* (Jkl.); JAEKEL (130) pp. 67 et sqq., 79, 346. —Skeleton of *Thecoidea* (=*Edrioasteroidea*) fully discussed; JAEKEL (130) pp. 11 et sqq.

"Pores" of *Cystidea*, "Pectini-rhombs" of *Cystidea Rhombifera*, their origin, evolution, and meaning; BATHER (22) p. 917. —Thecal pores of *Cystidea* (Jkl.); JAEKEL (130) pp. 104–124, 184, 358.

'Vectacula,' new term for subvective grooves, i.e. ciliated food-grooves of *Pelmatozoa* (p. 13, footnote): "Hydrophores palmées" not found in *Pyrocystis* (p. 417), nor in *Aristocystis* (p. 411): Brachioles exist in *Aristocystis* (p. 411): 'Dactyli' 'fingers,' new term for brachiola of *Cystidea* (Jkl.) pp. 87, 355; JAEKEL (130).—Ambulacra of *Mesites* [=*Mesocystis*] discussed; SOLLAS (216) p. 706.

Stem of *Glyptosphaera* discussed (p. 423), Loss of stem in *Protocrinus* (p. 431); JAEKEL (130).

6. Hydrocoel, &c.:—Ambulacral system, its structure inferred in *Cystidea* (Jkl.) (pp. 79, 187, 351), and in *Thecoidea* (=*Edrioasteroidea*) (p. 12), Stone-canal of *Cystidea* (Jkl.) (pp. 98, 190, 362); JAEKEL (130).

7. Coelom:—Of *Cystidea* (Jkl.) and course of mesenteries; JAEKEL (130) pp. 124, 364.

8. Digestive system:—Course of gut in *Cystidea* (Jkl.) (pp. 127–137, 188, 364), in *Thecoidea* (=*Edrioasteroidea*), its coiling, connected with curvature of subvective grooves (p. 22); JAEKEL (130).

9. Nervous System:—Of *Cystidea* (Jkl.) (p. 143), of *Thecoidea* (=*Edrioasteroidea*) inferred (p. 25); JAEKEL (130).

10. Mesodermal tissues, joints:—Muscle system of *Cystidea* (Jkl.) (p. 144), of *Thecoidea* (= *Edrioasteroidea*) inferred (p. 24); JAEKEL (130).
11. Vacant.
12. Genital system:—Of *Thecoidea* (= *Edrioasteroidea*) inferred (p. 25), parietal pore [gonopore] and genital organs of *Cystidea* (Jkl.) (pp. 137–143, 190, 363); JAEKEL (130).

h. *BLASTOIDEA.*
1–4. Vacant.
5. Skeleton:—'Dactyli' 'fingers,' new term for brachiola; JAEKEL (130) p. 87.
6–12. Vacant.

ii. **Variation**:—

a. In form:—Vacant.

b. In form and surface characters:—Local races of *Asterias forbesi* and *A. vulgaris*; MEAD (174) pp. 39, 42.—In proportions, marginals, and spines of *Goniaster americanus*; VERRILL (243) p. 153.—In arm-length of *Ctenodiscus corniculatus*, *Solaster endeca*, *Cribrella oculata*, *Asterina lincki* (p. 339), in dorsal skeleton of *Solaster papposus* (p. 338); DOEDERLEIN (78).—In spines and radial scutes of *Ophioglypha lymani*, spines of dorsal disc of *Ophiactis asperula*; LUDWIG (157) pp. 5, 6.—In proportions and form of oral shields, and number and arrangement of adjacent angular plates, in *Ophiura pallida* (p. 11), in spines of *Ophiothrix angulata* (p. 19) and minor points in various spp., passim; VERRILL (244).—Study of variations in *Scyphocrinus*; WAAGEN & JAHN (246) pp. 63, 74.

c. In colour:—In life and alcohol, of various Holothurians; BEDFORD (28).—Spotted and striped *Synapta beseli*; BEDFORD (28) p. 142.—Colour of *Synapta roseola* and *S. inhaerens*, normal pink of former perhaps due to excess of iron, not protective; CLARK (57) p. 24, 27, coloured pl. x.—Colour of *Holothuria surinamensis* (p. 122), of *Cucumaria punctata* (p. 124) and of Bermuda Echinoderms generally (pp. 130–134): local variation *Echinometra subangularis* N. and S. of Bermuda, *Mellita sexforis* Bermuda and Jamaica, *Luidia clathrata* Bermuda (pp. 117, 118); CLARK (56).—Under surface of *Hymenaster regalis* var. *agassizi* deep pink or rose-colour in alcohol, upper side paler pink; VERRILL (243) p. 221.—Colour in life of *Asterina cepheus* (p. 541), *Linckia ehrenbergii*, *L. multifora* (p. 542), *Ophiarthrum elegans* (p. 547); LUDWIG (158).—Colour of various *Ast.* and *Oph.* in spirit; BIDENKAP (37 and 38).—Local colour varr. of *Ophiura brevispina* (p. 5): colour of *Ophiura rubicunda* (p. 6), *O. appressa* (p. 7), *O. pallida* (p. 7), *Ophiopaepale goesiana* (p. 8), *Ophiothrix angulata* (p. 19), *O. oerstedi* (p. 20), *O. suensoni* (p. 21), *Ophiactis dispar* (p. 32), *Ophiopristis hirsuta* (p. 51), *O. lineolata* (p. 54), *Amphipsila maculata* (p. 57), *Ophiomyxa flaccida* (p. 66), *Ophioplus tuberculosus* (p. 72), *Astrophyton muricatum* (p. 84) and *Gorgonocephalus mucronatus* (p. 85); VERRILL (244).—Colour in life of *Ophiactis asperula* (p. 7), *Amphiura chilensis* (p. 12), in spirit of *Ophiocten amitinum* (p. 5); LUDWIG (157).—Colour of spp. of *Antedon* and *Actinometra*; DOEDERLEIN (77).—*Pentacr. wyville-thomsoni*, bluish-green in life; ALBERT, Prince de MONACO (5) p. 313.

d. Meristic variation:—
1. Variation from pentamerous symmetry:—Loss of anterior ambulacrum, and diminution of the two anterior interambulacra, combined with normal peristome, in *Scutella faujasi*; KERFORNE (134).—In *Ast.*, general account; HAMANN (118)

p. 737.—4-rayed and 6-rayed *Odontaster hispidus* (p. 207), *Plutonaster agassizi* (p. 211); VERRILL (243).—6-rayed *Linckia ehrenbergi* (p. 542), *Ophiactis savignyi* (p. 545); LUDWIG (158).—6-rayed *Ophiocoma pumila*; CLARK (56), p. 118.—6-rayed *Ophiothrix galapagensis*; LÜTKEN & MORTENSEN (162) p. 182.—6-rayed *Astroschema oligactes*; VERRILL (244) p. 77.—*Hemicosmites laevior*, 7 instead of 6 infralaterals; JAEKEL (130) p. 309.

2. Reduplication or absence of parts:—in number of Polian vesicles and stone-canals, presence or absence of Cuvierian organs, in *Holothuria atra* (p. 147), and *H. cinerascens* (p. 148), of Polian vesicles in *Synapta ooplax* (p. 141); BEDFORD (28).—In number and symmetry of tentacles in *Pseudocucumis africana*, compared with normal condition of other spp.; BEDFORD (29) p. 843.—In number of tentacles and Polian vesicles in *Holothuria surinamensis* (p. 122), of Polian vesicles in *Cucumaria punctata* (p. 123); CLARK (56).—In columns of interambulacrals in *Melonites* and *Oligoporus*, fewer being comparable with phyloneanic, and more with phylogerontic, character; JACKSON (127).—Accessory madreporite, not connected with stone-canal, in *Asterias*; MEAD (174) p. 73.—2 interradial marginals in one axial angle of a specimen of *Benthopecten spinosus* in place of 1; VERRILL (243) p. 218, pl. XXX.—Arm of *Actinocr. porteri* "divides into 3 branches at once, at the thirteenth joint" [apparently due to regeneration]; WHIDBORNE (250) p. 221.

e. Abnormalities:—Accessory pores in genitals of *Arbacia* and *Strongylocentrotus* "a monstrosity...parallel to the normal feature of" certain palæozoic *Ech.*; JACKSON (127) p. 131.—In *Ast.*, general account; HAMANN (118) p. 737.—Irregular mouth-shields in *Amphiura assimilis*; LÜTKEN & MORTENSEN (162) p. 154.—Hypertrophy of one half in *Gorgonocephalus diomedeæ*; LÜTKEN & MORTENSEN (162) p. 188.—Abnormal cup in the type-specimen of *Laubeocr. barrandei*; WAAGEN & JAHN (246) p. 31.—Pathological individual of *Hemicosmites pyriformis* with elevated anus; JAEKEL (130) p. 309.

iii. **Secondary Sexual Characters**:—

a. Differences of Form or Structure:—Vacant.

b. Differences of Colour:—Vacant. (See under II, B, ii, c.)

c. Protection of Young:—In *Ast.*, general account; HAMANN (118) p. 627.—In *Oph.*, list of viviparous spp.; LUDWIG (159) p. 230.—Brood-chamber and parturition in *Pteraster hexactis*; DOEDERLEIN (78) p. 338.

(C.) PHYSIOLOGY.

i. **General**:—Account of *Ast.*; HAMANN (118) pp. 724–735.

ii. **Circulation**:—Fluid in respiratory trees of *Holothuria* and *Stichopus*, affords support for muscular action; BORDAS (43).

iii. **Respiration**:—Osmosis, respiratory trees, *Holothuria* and *Stichopus*; BORDAS (43).—Respiration as function of thecal pores in *Cyst.*; JAEKEL (130) p. 120.

iv. **Alimentation and Digestion**:—Vacant.

v. **Excretion**:—Uric acid and urates in respiratory trees of *Holothuria* and *Stichopus*; BORDAS (43).—By ciliated funnels and phagocytes combined in *Synapta*; CLARK (57) p. 29.—By amoebocytes in Echino-

derma compared with that in Mollusca; its imperfection; CUÉNOT (65) p. 87.

vi. **Sensation**:—Reflex and coordinated responses of the *Ech.* spine; UEXKÜLL (235).—Action of pedicellariae in *Ech.*, immunity of same individual or species ascribed to a principle—'autodermin'; UEXKÜLL (234).—Sense of smell in *Synapta*, otocysts as equilibrating "positional organs," not auditory (p. 28), coordination of tentacles and muscles survives cutting of nerve-ring (p. 30); CLARK (57).—Experimental investigation of nervous system in Echinoderma, for determination of coordinating centres as stages in evolution of brain; STEINER (222).—Movements of various Echinoderms ascribed to stereotropism, geotropism, and heliotropism, not to consciousness; LOEB (152 A).

vii. **Miscellanea and Experimental Physiology**:—Amoebocyte formation in parietal lacunae of respiratory trees of *Holothuria* and *Stichopus*; BORDAS (43).—Tonus of Holothurian muscles lost by warmth, increased by cold, the limits of the observation being 6—38° C.; SCHOENLEIN (210).—The hardening of the Holothurian skin in response to stimuli, and its softening into a slime under other conditions, especially death, chemically and microscopically examined in spp. of *Holothuria*, *Stichopus*, *Cucumaria*, *Synapta*, and found to be due to the inhibition or excitation by the cellular elements of a histolytic tendency in the intercellular substance; LINDEMANN (146). —Temperature (+) at which *Echinus microtuberculatus*, *Strongylocentrotus lividus*, and embryos of latter are killed; VERNON (241).—Pedicellariae of *Asterias* grasp fine threads and can support weight of animal; MEAD (174) p. 74.—Madreporite not essential to life of *Asterias*, at least for 5 months; MEAD (174) p. 73.—Experiments on otocysts (see vi), ciliated funnels (see v) etc. in *Synapta*; CLARK (57).

(D.) BIONOMICS.

i. **General Accounts**:—Habitat, bathymetric distribution, etc. of the various recent Classes, from a palæontological point of view; GRABAU (107) pp. 345–348.—Habits of larvae, young, and adult *Asterias*; MEAD (174) pp. 50, 53.

ii. **Special habits**:—Social habit of *Ech.* and *Ast.*; SEMON (213) p. 505.—Phosphorescence,—in *Ophiopsila annulosa*; LO BIANCO (147) p. 472. See also NUTTING (184, 185).

iii. **Habitat**:—Of *Hol.*, *Ech.*, *Ast.* and *Oph.* in English Channel; ALLEN (8) pp. 460–476.—Of *Hol.*, *Ech.*, *Ast.*, *Oph.* in Lyngenfjord and Tromsö Sound; BIDENKAP (37, 38) *passim*.—Of *Hol.*, *Ech.*, *Ast.*, *Oph.* and *Crin.* in Bay of Naples; LO BIANCO (147), pp. 469–476.—Of Bermuda *Hol.* (*passim*) esp. *Synapta vivipara* under a stone in tideway (p. 125); CLARK (56).—Of *Synapta inhaerens*, sand and mud, *S. roseola* under stones or in gravel; CLARK (57) pp. 24, 25, 27.—Of *Echinometra lucunter*, which bores channels in Suva coral-reefs; AGASSIZ (1) p. 118, pl. XXX.—Of *Ast.* in general; HAMANN (118) p. 735. —Of *Ophionereis reticulata*, in bunches partially buried in the sand, and of *Luidia clathrata*, partly buried in sand; CLARK (56) p. 118. —Of *Oph.* at Bahamas, esp. on hard bottom and on corals; VERRILL (244) p. 2 and *passim*.—Colony of *Cyathidium holopus* with all individuals bent in same direction, probably to meet some constant current, orientation as yet unknown; HENNIG (119) p. 116.—Unstalked *Protocrinus* sessile on limestone floor, cf. *Marsupites* and *Uintacrinus*; JAEKEL (130) p. 431.—Mode of life and habitat of *Thecoidea* (=*Edrioasteroidea*); JAEKEL (130) p. 26.

iv. **Feeding**:—Food of *Hol.*, *Ech.*, *Ast.*, *Oph.* found in English Channel; ALLEN (8) pp. 460–476.—Use of pedicellariæ in *Ech.* for feeding; UEXKÜLL (234) p. 396.—Feeding of *Ast.*; HAMANN (118) p. 732.—Food of *Asterias*, and method of feeding; MEAD (174) pp. 42, 56; FIELD (86) p. 154, pl. i.—Food of *Astropecten* (p. 471), *Oph.* obtain food by settling near the food-currents of sedentary organisms (p. 472); LO BIANCO (147).

v. **Defence and Protection**:—

a. b. c.—of *Ast.*, short account; HAMANN (118) p. 736.—Modes of protection against molluscs; SEMON (213) p. 509.

a. Active:—Cuvierian organs as weapons of defence; RUSSO (203).—Pedicellariae in *Ech.* distinguished as 'poison-tongs'=gemmiform, 'snap-tongs'=tridactyle, 'grip-tongs'=ophicephalous, and 'cleaning-tongs'=trifoliate, their action described and the poison investigated, from observations on *Echinus acutus*, *E. melo*, *E. microtubercularis* [sic], *Sphaerechinus granularis* and *Strongylocentrotus lividus*, also pedicellariae of *Ast.*; UEXKÜLL (234).

b. Concealment:—Vacant.

c. Protective Coloration:—*Oph.* with coiled arms imitate form and colour of gorgonian corals on which they live; VERRILL (244) p. 2.—The brilliant colours of deep-sea echinoderms and other animals may be rendered visible by phosphorescent light, and therefore may be protective; NUTTING (184).—Phosphorescence in an Ophiurid, perhaps protective; NUTTING (185) p. 795.

vi. **Locomotion**:—Of *Hol.*, *Ech.*, *Ast.*, *Oph.* found in English Channel; ALLEN (8) pp. 460–476.—Of *Synapta*, by body-wall and anchors, and by tentacles; CLARK (57) pp. 25–28.—Of *Ast.* general account; HAMANN (118) pp. 728–730.—*Asterias* crawls over greasy surfaces and in a very thin layer of water, but not out of water (p. 40), rate and distance of migration (p. 41); MEAD (174).

vii. **Autotomy and Regeneration**:—In *Synapta inhaerens* and *roseola*, never normal (p. 25), part cut off from head never lives (p. 30); CLARK (57).—General account of schizogony and regeneration in *Ast.* (pp. 655, 656) and of autotomy (p. 727), addendum (p. 743); HAMANN (118).—Effect of mutilation on rate of growth of both original and regenerated parts in *Asterias* (p. 63), experimental study, arms regenerated by disc, but disc never regenerated by arms, multiplication of individuals by artificial fission highly improbable and never observed (p. 69); MEAD (174).—Fissiparity in *Asterias tenuispina* (p. 470); LO BIANCO (147).—Regeneration, *Linckia ehrenbergi* (p. 542), *Ophiactis savignyi* (p. 545); LUDWIG (158).—Arm of *Actinocr. porteri*, see II, B, ii, d, 2; WHIDBORNE (250) p. 221.

viii. **Parasites and Commensals**:—*Myzostoma*, species on *Antedon phalangium* and *A. rosacea* (p. 468), *Acholoë astericola* and *Ophiodromus flexuosus* in ambulacral groove of *Luidia ciliaris* (p. 471), *Ophiothrix* on sponges or ascidians so as to benefit by their food-currents (p. 472), *Alepas minuta*, *Scalpellum vulgare* and *Perigonimus cidaridis* (p. 473), *Fierasfer* in *Holothuria* and *Stichopus* (p. 476); LO BIANCO (147).—*Eulima* attached to external surface and in buccal cavity of *Holothuria vagabunda*; BEDFORD (28) p. 146.—*Fierasfer homei* in *Stichopus chloronotus*; BEDFORD (28) p. 150.—Ova and embryos of a Gastropod, ?parasitic, found "in the usual mucoid (?) capsules" of *Pseudocucumis africana*; BEDFORD (29) p. 845.—*Phyllacanthus annulifera*, spines quite covered with an incrusting Zoanthid; BELL (32) p. 134.—*Arete dorsalis*, an Alpheid, lives on oral region of *Echinometra lucunter* on madreporic reefs at Djibouti; COUTIÈRE (62)

p. 370, and (63) pp. 509, 510.—Polynoid *Acholoë astericola* in groove of *Astropecten irregularis* (p. 462) and mollusc *Montacuta substriata* on spines of *Spatangus purpureus* (p. 475); ALLEN (8).—*Protozoa*, worms, *Mollusca*, *Myzostomidae*, *Crustacea*, *Vertebrata*, as parasites of *Ast.*; HAMANN (118) p. 738.—Resistance of *Asterias* to parasites; MEAD (174) p. 68.—*Monilopora beecheri* and *M. antiqua*, corals, on stems of erect *Platycr.* and other *Crin.*, in Keokuk and Hamilton strata, like *M. crassa* in British Carboniferous Limestone; GRABAU (109) pp. 412, 413, pl. i.—*Capulus* (*Orthonychia*) on tegmen of *Actinocr. porteri*; WHIDBORNE (250) p. 221.

ix. **Echinoderms as Food**:—Gonads of *Ast.* and *Hol.* are even more palatable than those of *Strongylocentrotus lividus*, and should be eaten; BORDAS (44) p. 195.—*Ech.* gonads canned and exported from California to China as food; KELLOGG (133) p. 263.

As food for mollusca, which decalcify them by secretion of sulphuric acid; SEMON (213) p. 509.—Natural enemies of *Asterias* in Narragansett Bay; MEAD (174) p. 68.

As food for fish,—*Ophiocten*, *Ophiura*, *Strongylocentrotus*, *Solaster*, *Cribrella*, *Stichopus*, *Phyllophorus*, and other echinoderms in Cod (*Gadus callarias*) and Haddock (*G. aeglefinus*); NORDGAARD (181) pp. 15–18.

x. **Echinoderms as Rock-formers**:—Cystid and Crinoid limestones of Ordovician, Devonian, Carboniferous, and Permo-Carboniferous age, from China; LOERENTHEY in LÓCZY (149) pp. 242–258.—Petit Granite de Soignies et des Ecaussines, formed of *Crin.*; GOSSELET (106) p. 53.—*Crin.* columnals spathose though dolomitised, in a crinoid limestone; STELLA (224) pp. 155–160.

(E.) MISCELLANEOUS.

i. **Research and Instruction**:—

a. Preservation:—Of ova of Echinoderms for microscopic examination; MORGAN (178) p. 459.—Echinoderms; LO BIANCO (148) pp. 27–29.—Of *Hol.* for histology; BORDAS (44) p. 195.—Killing and preservation of *Synapta*; CLARK (57) p. 25.—Formaline destroys spicules, Echinoderms to be preserved in spirits; THILENIUS (228).

b. Methods of research:—Staining Echinoderm ova during life; FISCHEL (88).—Preparation of spicules of *Hol.*; TEMPÈRE (227).—The development of columnals by acid in a crinoid limestone; STELLA (224) p. 155.—Investigation of *Crin.* and *Ast.* in Bundenbach slates of Devonian age by X-rays; BRÜHL (48) p. 549.

c. Museum Exhibits and Collections:—Exhibition of recent Echinoderms at British Museum; ANON (17).—List of specimens of fossil *Ast.*, *Crin.* and *Blast.* figd. or descr. by R. P. Whitfield, with present location, exc. those in Amer. Mus. Nat. Hist.; WHITFIELD (253) pp. 147, 148.—List of historical specimens of Silurian *Ast.*, *Crin.*, *Cyst.* in Amer. Mus. Nat. Hist.; WHITFIELD & HOVEY (254) pp. 88, 89.—Museum Comp. Zool. Harvard, large slab of *Cintacr.*; WOODWORTH (258) p. 5, pl.—List of Blastoidea in British Museum; BATHER (26).

d. Instruction:—Notes and diagrams for help of students; SELENKA (211).—Popular account of dissection of *Strongylocentrotus lividus* and *Asteracanthion rubens*; GRUVEL (113).—Practical course in study of cell and fertilization with examples from *Ech.* ova and hybrid larvae; HAECKER (116).

ii. **Economics**:—Figures of various Echinoderms for the edification of designers; HAECKEL (115).—Trepang fishery; SEMON (213) p. 309.—Increase of *Ast.* on oyster beds due to capture of surface-feeding fish; EDITORIAL AMER. NATURAL. (81).—Investigation of *Asterias* with reference to attacks on oyster beds and clams, modes of protection; MEAD (174).—*Asterias forbesi* as destroyer of oysters, how to check it, value as manure; FIELD (86). See also under II, D, ix.

iii. **Bibliography**:—Literature of Echinoderma for 1898, with abstracts; LUDWIG (161).

Chiefly of Atlantic *Ast.*, with special list of Verrill's papers on *Ast.*; VERRILL (243) p. 224.—Of *Oph.*, systematic, subsequent to Lyman's Monograph of 1882; LÜTKEN & MORTENSEN (162) pp. 195–205.—Of Antarctic *Oph.*; LUDWIG (157) p. 27.—Of Antarctic *Crin.*; LUDWIG (156).—Of 1896 papers on Experimental Embryology; ENDRES (82).

Of fossil *Crin.* of Normandy; BIGOT (39) p. 71.—Of N. American Carboniferous Invertebrates, with list of Echinoderm genera on pp. 43, 44, and alphabetical index to spp.; WELLER (249).—Palæozoic Echinoderms of Indiana, uncritical list of spp., with annotated list of literature; KINDLE (136) pp. 422–439 and 489.—Of Spanish fossils, with list of spp. [vide sub III, B]; MALLADA (167).—Echinoderm fossils mentioned in Bassi's "Tabella Oryctographica" 1757, s.v. "Crustacea," now determined from the originals in Geological Institute of Bologna; VINASSA DE REGNY (245) p. 493.

List of published writings by J. Hall; HOVEY (124), STEVENSON (225).—List of palæontological writings by A. Pomel, with remarks; FICHEUR (85) pp. 215, 221.—List of published scientific writings of C. Wachsmuth; BATHER (25).—The date of Barrande's Cystid works; JAEKEL (130) p. 59, footnote.—Dates of publication of parts of Paléontologie Française; SHERBORN (214).

iv. **Historical, Popular notions, &c.**:—History of Echinoderm palæontology, with critical appreciations; ZITTEL (261) pp. 185, 186, 805–810.—History of discovery and study of Egyptian *Ech.*; FOURTAU (96) p. 609.—Spines of *Cidaris glandaria* mentioned by Egyptians under XXVI Dynasty, and in other writings of antiquity; FOURTAU (96) p. 613.—History of opinion and literature concerning pedicellariae; UEXKÜLL (234) pp. 337–354.—General history of the Taxonomy of *Ast.*; HAMANN (118) pp. 657–666.—History of knowledge of *Cystidea*; JAEKEL (130) pp. 55–63.

(F.) AUXOLOGY.

i. **General Principles**:—Suppression or addition of interambulacrals in palæozoic *Ech.* due respectively to retardation or acceleration of development (p. 131); "Throughout the life of the individual, stages may be found in localized parts, which are similar to stages found in the young, and the equivalents of which are to be sought in the adults of ancestral groups. The equivalents of regressive or progressive localized stages are to be sought in the adults of degradational or progressive series of the group"; illustrations from *Ech.* and *Crin.*: JACKSON (127).

ii. **General Accounts**:—Vacant.

iii. **Formation of Gonads**:—In *Holothuria tubulosa* and *H. impatiens*; BORDAS (44) p. 198.—"A special structure or apical body at the anterior tip of the head...in more than 40 species" of Invertebrates "including *Toxopneustes*"; FIELD (87).—Alveolar structure of

cytoplasm in ova of *Toxopneustes*, *Arbacia*, *Echinarachnius*, *Asterias*, and *Ophiura*, and its relations to astral rays; WILSON (257).—The same for *Echinus microtuberculatus*, with general discussion; ALBRECHT (7).

iv. **Oviposition, Fertilisation, and Segmentation** :—Breeding of *Echinarachnius parma*, *Cribrella*, and *Oph.*, Wood's Holl, May 1898, and *Ophiopholis* at Nahant, May 1893; BUMPUS (49).—Breeding season: of *Synapta* at Woods Holl; CLARK (57) p. 25.—of *Asterias* in Narragansett B. and at Woods Holl; MEAD (174) pp. 44, 48.—of *Hol.*, *Ech.*, *Ast.*, *Oph.*, *Crin.*, in Gulf of Naples; LO BIANCO (147) pp. 469–476.—on W. coast of Sweden; AURIVILLIUS (21) pp. 11–16. —of *Luidia sarsi*; NORDGAARD (181) p. 20.—Spawning of *Ast.* in general; HAMANN (118) p. 626.—*Oph.* spawn in afternoon as a rule; GRAVE (110) p. 93.—Migration from deep to shallow water at breeding period, *Asterias*, *Asthenosoma*; SEMON (213) p. 507.

Hol. ova, Falmouth, November and December; VALLENTIN (238) p. 535.—Maturation and fertilisation of ova in *Ast.*; HAMANN (118) p. 628.—Ova of *Ophiura olivacea*, appearance and fertilisation; GRAVE (110) p. 93.

Segmentation of ova studied by staining during life; FISCHEL (88). —Discussion of FISCHEL, on basis of foam-structure of protoplasm; RHUMBLER (197 A).—Astrosphere in immature ova of *Echinus microtuberculatus* and *Sphaerechinus granularis*; STRICHT (225 A).

v. **Larval Stages**:—

a. Plutei at Falmouth in September; VALLENTIN (238) p. 535.

b. Larval stages of a Holothurian, popular account; ROULE (201) p. 127 and text-figg.

c. Larval stages of *Ech.*, popular note; ROULE (201) p. 127.—Early development and description of plutei of *Echinus esculentus* and *E. miliaris*, with figures; MACBRIDE (166).

d. General account of larval development in *Ast.*; HAMANN (118) pp. 628–645.—Habits of *Asterias* larva; MEAD (174) p. 50.—*Bipinnaria asterigera* in Puddefjord in November; NORDGAARD (182) p. 14.—Goto's account of development of *Asterias pallida* [(81) Zool. Rec. 1898] criticised with special reference to primitive segmentation of coelom, right hydrocoel, fixation by preoral lobe, and absence of secondarily formed spaces in mesenchyme, all which statements are reaffirmed by MACBRIDE (164).

e. Early development of *Ophiura olivacea*, corroboration of Goto's conclusions from *Asterias pallida*; GRAVE (110).

f, g, h. Vacant.

vi. **Organogeny** :—

a. *Echinoderma* :—

12. Sexual cells differentiated from peritoneal lining of cœlom as cellular cords [rachis] in all *Echinoderma*, but since *Crin.* have primitively a single rachis they, with *Hol.*, are *Monorchonia*, while *Ech.*, *Ast.*, *Oph.* are *Pentorchonia*; RUSSO (204).

b. *Holothurioidea* :—

8. Development of Cuvierian organs; RUSSO (203).

c. *Echinoidea* :—Vacant.

d. *Asteroidea* :—

1. General account of organogeny; HAMANN (118) pp. 646–655.

2. Plane of larva and adult in *Asterias pallida*; MACBRIDE (164) p. 49.

6. Origin and meaning of the hydrocoel; MACBRIDE (165) p. 143.—Right hydrocoel in *Asterias pallida*; MACBRIDE (164) p. 49.

7. Alleged schizocoels in mesenchyme of *Asterias pallida*; MACBRIDE (164) p. 50.

e. *Ophiuroidea* :—Vacant.

f. *Crinoidea* :—

12. Origin and relations to aboral [?axial] sinus and axial organ of genital rachis in *Antedon*; RUSSO (204).

g, h. Vacant.

vii. **Post-larval Growth-stages** :—

b. *Holothurioidea* :—Difference in colour between young and adult *Synapta godeffroyi*; BEDFORD (29) p. 847.

c. *Echinoidea* :—Differences of form and apical system according to age in *Hemiaster cubicus*; FOURTAU (96) p. 628.—Addition and development of interambulacrals in *Strongylocentrotus*, *Arbacia*, *Melonites*, and *Oligoporus* (pp. 129–131, figg. 110–116), non-imbrication of morpho-brephic interambulacrals in *Lepidechinus* proves simplicity of all interambulacrals in ancestor (p. 132); JACKSON (127).

d. *Asteroidea* :—Rate of growth of *Asterias* up to sexual maturity (pp. 58, 66), brephic *Asterias* on sea-weed in Narragansett B. (p. 47); MEAD (174).—Neanic *Astropecten zebra*; LORIOL (154) p. 9.

e. *Ophiuroidea* :—Study of post-larval growth-stages in *Ophiactis asperula* and comparison with other *Ophiolepididæ* and *Amphiuridæ*, also in *Ophiactis kröyeri*, *Amphiura magellanica*, *A. patagonica*, and *Ophiacantha vivipara*; LUDWIG (159).—Young stages of *Oph.* compared with *Ophiotypa simplex*; KOEHLER (142) p. 3.—Brephic *Ophiothrix angulata* (pp. 19, 20), brephic and neanic *Astrogomphus vallatus* (p. 81), neanic *Astrophyton muricatum* (p. 84); VERRILL (244).—Neanic *Amphiura eugeniæ*, *A. patagonica*, *A. chilensis*, differences from adult; LUDWIG (157) pp. 9, 11, 12.—Young specimens of *Ophioglypha tumulosa* (p. 122), *O. plana* (p. 124), *O. divisa* (p. 129), *Ophiomusium glabrum* (p. 134), *O. diomedeæ* (p. 135), *O. lymani* (p. 139), *Amphiura diomedeæ* (152), *Ophiacantha inconspicua* (p. 169), *Asteronyx excavata* (p. 186); LÜTKEN & MORTENSEN (162).

f. *Crinoidea* :—Neanic *Actinometra belli*, brachia; DOEDERLEIN (77) p. 479.—Pentagonal and cirriferous morpho-brephic columnals in *Metacr. rotundus* and *Pentacr.* (*Isocr.*) *decorus* correlated with morphephebic characters of [alleged] "ancient fossil representatives," e.g. *Pentacr.* (*Extracr.*) *briareus*: morphephebic columnals of *Platycr.* are circular, as were all columnals of ancestor: morpho-brephic brachials of *Encrinus* are uniserial, but morphephebic are biserial; JACKSON (127) pp. 127, 128, figg. 124–127.

g. *Cystidea* :—Young stages of *Thecoidea* (= *Edrioasteroidea*); JAEKEL (130) p. 28.

viii. **Developmental mechanics and Experimental Embryology** :—Summary of 1896 papers; ENDRES (82).

General discussion of segmentation and early organogeny in Echinoderma from fragmentary or other ova and blastulæ; DRIESCH (79).—No interaction between first two blastomeres, but number of blastulæ derived from a single ovum depends on the geometrical form impressed on the protoplasm, as experimentally shown in *Ech.* ovum; LOEB (151).—Merogonic fertilisation and hybridisation of ova of *Echinus*, *Strongylocentrotus*, and *Sphaerechinus*, with discussion of conclusions; DELAGE (67).—Discussion of Boveri and Delage; GIARD (104) pp. 663–665.—Criticism of Delage's conclusions as to merogony (see 43, Zool. Rec. 1898, and 67, this Record); GIARD (103).—'Ovulase,' i.e. extract of spermatozoa of *Strongylocentrotus lividus* and

Echinus esculentus by agitation and filtration, induces segmentation in ripe ova [of same spp.?]; PIÉRI (190).—Parthenogenesis in *Ech.* (*Arbacia*),—"mixture of about 50 % $\frac{10}{8}$ *n* $MgCl_2$ with about 50 % of sea water was able to bring about the same effect as the entrance of a spermatozoon," viz. segmentation and formation of normal plutei; LOEB (152).—Development and growth of *Ech.* larvæ hastened by weak alkali (NaHO) checked by weak acid (HCl); LOEB (150) [cf. 132 Zool. Rec. 1898].—Effect of solutions of Sodium and Magnesium chloride on fertilized and unfertilized ova of *Arbacia punctulata*, *Sphaerechinus*, *Echinarachnius parma*, *Asterias forbesi*, and other animals, criticism of Loeb; MORGAN (178).

Hybrid larvæ,—stale ova of *Sphaerechinus granularis* × fresh sperm of *Strongylocentrotus lividus* (p. 359), effect of staleness of gonads (in *Strongylocentrotus lividus*) on development; with relative staleness of ♂ and ♀; VERNON (240).—Hybridisation; DELAGE (67).

Action of excess of carbon dioxide in sea-water on skeletogeny in *Ech.* larvæ; DRIESCH (80).—Effects of various stains on developing ova of *Echinus microtuberculatus* and *Sphaerechinus granularis*; FISCHEL (88).

III. DISTRIBUTION.

A. GEOGRAPHICAL.

i. **General**:—Migration of Echinoderms in larval state; BATHER (27) pp. 270, 271.—Distribution of *Ast.*, horizontal and vertical; HAMANN (118) pp. 720–723.—Bathymetric of recent Classes; GRABAU (107) pp. 345–348.

Discussion of Ludwig's reports on *Hol.*, *Crin.* and *Oph.* of Hamburger Magalhaensische Sammelreise, with reference to Bipolar hypothesis; ORTMANN (187).—Discussion of *Hol.*, *Ech.*, *Ast.*, *Oph.*, *Crin.* spp. which have been adduced in support of the Bipolar hypothesis, and rejection of the latter; THOMPSON (230) esp. pp. 317–322.

ii. **Atlantic Ocean and adjacent Seas**:—Various localities, *Hol.* dredged by 'Travailleur' and 'Talisman'; R. PERRIER (191).

Scandinavia:—Norway. Puddefjord near Bergen, *Bipinnaria asterigera*; NORDGAARD (182) p. 14.—Tromsö Sound, *Hol.*, *Ech.*, *Ast.*, *Oph.*; BIDENKAP (38).—Storfjord, the S.W. branch of Lyngenfjord, *Ech.*, *Ast.*, *Oph.*, incl. *Asterias stellionura*, large *Henricia sanguinolenta*; BIDENKAP (37) pp. 84, 85, 99.—Öresund,—general absence of Echinoderms from S. portion and Lommabugt, but *Asterias rubens* between Sjollen and Malmö; LÖNNBERG (153) p. 17: geographical affinities of Echinoderm fauna; BATHER (27) pp. 267, 269.

British Coasts:—Irish Sea, Port Erin, dredgings of *Ech.*, *Ast.*, and *Oph.*; CHADWICK (55).—English Channel, Thirty fathom line from Eddystone to Start Point, lists of Echinoderms, with character of bottom, associated species, and comparative distribution; ALLEN (8) pp. 390–439 passim, 460–476, 530, 536, and charts v–ix.—Falmouth, plutei and *Hol.* ova; VALLENTIN (238) p. 535.—Devon, Salcombe B., *Ophiocnida brachiata*; NORMAN (183) p. 289.

From B. of Biscay to Azores and Western Mediterranean, *Hol.* dredged by 'Princesse Alice,' with n. spp. of *Stichopus*, *Psychropotes*, and *Scotoplanes*; HÉROUARD (120).—ditto, *Kolga* and *Scotoanassa*: HÉROUARD (121).—New Madeira. 14ᵉᵃ
thomsoni; ALBERT, Prince de

Mediterranean:—the spp. of *Echinocardium* found in Mediterranean, and their distribution; KOEHLER.—Adriatic and Ionian seas, June to September, *Ech.*, *Ast.*, *Oph.*, *Hol.*; CONDORELLI (61).

American coast:—n. spp. of *Tosia*, *Peltaster*, *Hippasteria*, *Cladaster*, *Mediaster*, *Pseudarchaster*, *Odontaster*, *Prionaster*, *Sideriaster*, *Marginaster*, and distributional notes on other *Ast.* spp.; VERRILL (243).—Geogr. and bathymetric range of *Asterias forbesi* and *A. vulgaris*, with special reference to Narragansett B. and Buzzards B.; MEAD (174) p. 38.—Narragansett Bay—distribution of animals, esp. *Ast.*; SOUTHWICK (218): of starfish, breeding area; SOUTHWICK (219).—Antilles, common *Ech.*, *Oph.*, *Ast.*; SONTHONNAX (217).—Cuba, *Ech.*, *Ast.*, *Oph.*, *Crin.*; ARANGO Y MOLINA (19).—Bermuda, *Hol.*, *Ech.*, *Ast.*, *Oph.* collected 1898, esp. *Luidia clathrata*, *Holothuria captiva*, *Chiridota rotifera*, *Synapta inhaerens*, *S. roseola*, and *S. acanthia* n. sp.; CLARK (56).—Bahamas and W. Indies, *Oph.* coll. by Univ. of Iowa Exped. in 1893, under Nutting; VERRILL (244).—Mexico, *Astropecten rubidus* n. sp.; LORIOL (154) p. 16 [perhaps this should be III, A, iv].

iii. **Indian Ocean and adjacent Seas**:—Deep-sea (i.e. 112–1997 fms.) *Oph.* dredged by "Investigator,' already noted in Zool. Rec. 1897, with addition of *Amphiura misera*, *Ophiocreas* sp. ind., more exact localities are given; KOEHLER (142).—Malacca, *Astropecten penangensis* (p. 7), Sumatra, *A. zebra* (p. 9), Mazatlan, *A. verrilli* (p. 12), Madagascar, *A. inermis* (p. 14), Pondicherry, *A. koehleri* (p. 19), Ceylon, *Scaphaster* (n. g.) *humberti*, Mauritius, *Ophiocoma doederleini*, *Gorgonocephalus robillardi*: n. spp.; LORIOL (154).—Zanzibar and neighbourhood, complete list of 127 spp. recorded, chiefly based on Voeltzkow collection, the new records being *Antedon flagellata*, *Ophidiaster pustulatus*, *Linckia ehrenbergi*, *Mithrodia clavigera*, *Ophiocoma brevipes*, *Ophiothrix otiosa*, and *Holothuria lubrica*; LUDWIG (158).—Seychelles, coral reef of Mahé Id., collected by A. Brauer: *Mulleria echinites*, *M. mauritiana*, *M. parvula*, *Holothuria monacaria*, *H. vagabunda*, *H. impatiens*, *H. pardalis*, *H. flavomaculata*, *H. cinerascens*, *Stichopus chloronotus*, *Pseudocucumis africana*, *Synapta beseli*; LUDWIG (158) p. 563.—Delagoa, *Temnopleurus*; JUNOD & GODET (131) p. 281.

Amboina and Thursday Id., spp. of *Antedon* and *Actinometra*; DOEDERLEIN (77).—East Indian Region not separable from Australian "at any rate as regards the Echinoderms and Mollusks"; FARQUHAR (84) p. 188.

iv. **Pacific Ocean and adjacent Seas**:—Eastern Pacific, fr. G. of California to G. of Panama, *Oph.* dredged by 'Albatross,' incl. n. spp. of *Ophiozona*, *Ophiernus*, *Gymnophiura* (n. g.), *Ophioglypha*, *Ophiocten*, *Ophiomusium*, *Ophiactis*, *Amphiura*, *Ophionereis*, *Ophiochiton*, *Ophiacantha*, *Ophiomitra*, *Ophiothamnus*, *Ophiothrix*, *Ophiomyxa*, *Sigsbeia*, *Asteronyx*, *Astroschema*, and *Gorgonocephalus*, also Atlantic spp. of *Ophiomusium*, *Amphiura*, *Ophiactis*, and *Ophiacantha*; LÜTKEN & MORTENSEN (162).—B. of Monterey, general character of Echinoderm fauna; KELLOGG (133) p. 633.

S. Pacific, Funafuti in Ellice Is., and Rotuma, spp. of *Hol.* collected by J. S. Gardiner, with study of comparative distribution, one possible n. sp. of *Chiridota*; BEDFORD (29).—Funafuti, *Crin.*, *Ast.*, *Oph.*, *Ech.*; BELL (33): supplementary list of Echinoderms, esp. *Metalia* and *Nardoa*; HEDLEY (118 A) p. 530.—New Britain, *Antedon indica*, *Salmacis elegans* n. sp., *Astropecten monacanthus*, *Ophiomusium simplex*, and other more common forms; Fiji, *Antedon tuberculata* (p. 133); Lifu, *Ophiomastix mixta* and other more common spp. of

Ech., *Ast.*, and *Crin.*: BELL (32).—Loyalty Is., *Orcula dubia* n. sp. and various *Hol.*, also *Holothuria willeyi* n. sp. New Guinea; BEDFORD (28).

New Zealand, *Ophioplocus huttoni* n. sp.; FARQUHAR (84).

Japan, *Astropecten ludwigi*, *A. kagoshimensis*, n. spp.; LORIOL (154) pp. 21, 25.

v. **Arctic Ocean and adjacent Seas**:—Arctic *Crin.*, list, bathymetric distrib. etc. (see under vi); LUDWIG (156).—Arctic and subarctic *Oph.*, annotated list, with bathymetric and regional distrib., and comparison with Antarctic, 6 genera alone pass into Antarctic, and no spp., 5 spp. are circumpolar; LUDWIG (157) p. 22. Spitzbergen, *Pteraster hexactis* and *Solaster syrtensis* and other *Ast.*; DOEDERLEIN (78).—Spitzbergen and N. Norway, *Oph.*, *Ech.* esp. *Pourtalesia*, and *Crin.*, esp. *Antedon eschrichti*, 102 metres Spitzbergen, and 430 m., 80° N., and *A. phalangium*, 650 m., 65° N.; ALBERT, Prince de MONACO (6) p. 214.

vi. **Antarctic Ocean and adjacent Seas**:—Antarctic and subantarctic *Crin.*, list, bathymetric distrib., and comparison with Arctic; no bipolar sp. and no circumpolar; LUDWIG (156).—Antarctic and subantarctic *Oph.*, annotated list, with bathymetric and regional distrib., and comparison with Arctic, a parallelism in respect of families, but no bipolar or circumpolar species; LUDWIG (157) p. 17.

B. GEOLOGICAL.

(i) GENERAL.

Great value of *Echinoidea* in determining age of rocks, special value in Egypt, synchronistic table of Egyptian strata with those of Europe; FOURTAU (96) pp. 605–609, also corrections on p. 733.—*Ech.* in Tertiary of California "admirable horizon determiners"; MERRIAM (175) p. 161. —General geological history of *Ast.*; HAMANN (118) pp. 740–743.

(ii) CAINOZOIC.

a. **General**:—horizon not stated, "Gebel Haridi en face Tahta," Egypt, list of *Ech.*, also a new *Coptosoma* found near the Pyramids; FOURTAU (97).—*Ech.* found near Ghizeh; FOURTAU (98).—California, revised list and distribution of *Ech.* with *Schizaster lecontei*, n. sp. from the Martinez beds (Lower Eocene); MERRIAM (175).—Japan, *Astriclypeus integer*, *Linthia nipponica*, *Schizaster recticanalis*, n. spp.; YOSHIWARA (259).

b. **Pleistocene**:—Estuarine Clay of Magheramorne, Antrim, Ireland, fragments of *Echinus* and *Echinocardium*; BELL (31).

Leda Clay (=Champlain), of Ottawa Valley, a Spatangoid indet.; DAWSON (66).

c. **Pleiocene**:—Lombardy, annotated list of *Ech.* with n. spp. of *Brissopsis* and *Schizaster*; AIRAGHI (2).—Renault in Algeria, *Ech.* (pp. 52, 53), and general lists (pp. 84, 85); BRIVES (47).—Egypt, *Clypeaster aegyptiacus*, *Echinolampas*, *Echinocardium*; FOURTAU (96) pp. 721–723, also (98).

Lower Pleiocene, Plaisancien, "sables à Clypéastres," *Echinolampas* sp. and *Echinocardium* sp. nondescr.; FOURTAU (94).

Mexico, *Ech.*; AGUILERA (1 A) p. 230.—Ōji, near Tokyo, Japan, *Fibularia acuta*, n. sp.; YOSHIWARA (259).

d. **Meiocene**:—Umbria, list of *Ech.*; VERRI & ANGELIS D'OSSAT (242) p. 259.—Muro in Majorca, spp. indett. of *Clypeaster*; BOFILL Y POCH (41) p. 412.—Wieliczka, Galicia, traces of *Oph. Ephipipiellum*; ŁOMNICKI (152B); SZAJNOCHA (226).—Spain, list of Echinoderms; MALLADA (167) pp. 210–212.—Catalogue of *Ech.* from Egypt, with n. spp. of *Echinoneus, Echinocyamus, Scutella, Clypeaster, Pliolampas, Pericosmus, Brissus*, and revision of horizons and localities; FOURTAU (96) pp. 692–721, also (98).

Upper Meiocene:—Bolderian of Gerresheim near Düsseldorf, *Echinus pusillus, Spatangus acuminatus, S. hofmanni*; DEWALQUE (74) p. 122.—Sahelian near Perrégaux in Algeria, *Ech.*; BRIVES (47) pp. 61, 82.—Tortonian of Montjuich in Spain, *Ech.*; ALMERA (9) p. 686.

Middle Meiocene:—Schlier,—of Mt. Cedrone in Umbria, *Conoclypeus, Echinolampas, Echinanthus*; UGOLINI (236).—of Ponte dei Canti in Marche, *Hemipneustes*; ANGELIS D'OSSAT (14) p. 64.—Helvetian,—of Bou-Medfa and Hammam-r'Ihra in Algeria, *Ech.* (p. 24), and general list of *Ech.* (p. 72); BRIVES (47).—of Guverchin Kala, N. end of L. Urmi, N.W. Persia, spp. of *Clypeaster, C. guentheri* n. sp.; GREGORY (112).—of Grand Canary, *Ech.*; ROTHPLETZ & SIMONELLI (200).

Lower Meiocene. Langhian (=Burdigalian) of Bormida basin, and distribution elsewhere, *Ech.*; AIRAGHI (3) p. 251 and (4) p. 146.—Cartennian of Bou-Medfa and Hammam-r'Ihra in Algeria, *Ech.* (p. 22), of Ouillis-Mostaganem, *Ech.* (p. 55), and general list of *Ech.* (p. 68); BRIVES (47).

e. **Oligocene**:—Piedmont, *Echinolampas cassinellensis*, n. sp.; LORIOL (154) p. 5.

Upper Oligocene of Göd on Danube, Hungary, *Schizaster*; BÖCKH (40) p. 13.

Aquitanian and Tongrian of Bormida basin, and distribution elsewhere, *Ech.*; AIRAGHI (3) pp. 247, 251 and (4) pp. 144, 146.

f. **Eocene**:—Spain, list of Echinoderms; MALLADA (167) pp. 193–198.—Montserrat, Spain, *Ech.* with many nomina nuda of LAMBERT; ALMERA (10) p. 703.—Catalogue of *Ech.* from Egypt, with n. spp. of *Rhabdocidaris, Gisopygus* n. g., *Bothriolampas* n. g., *Pericosmus, Megapneustes* n. g., and revision of horizons and localities; FOURTAU (96) pp. 633–692, also (98).

Bartonian of Poleo near Schio, n. spp. of *Spatangus, Hypsospatangus*, and *Eupatagus*; MAZZETTI (172).—Base of Priabona beds (yellow limestone with *Leiopedina tallavignesi*) near Lonigo in Mti. Berici, Vicenza, Italy, *Lambertia gardinalei* n. g. et sp.; OPPENHEIM (186).

Nummulitic:—"Nummulitenschichten von Mattsee" near Salzburg, Tyrol, *Rhizocr., Pentacr.* and 13 *Ech.* genera; FUGGER (101) p. 393.—Glauconie grossière at base of Mokattam contains numerous marginals of *Ast.*, ? *Goniaster*, associated with *Porocidaris schmideli* and *Echinolampas africanus*; FOURTAU (95).—Nummulite Limestone, between Lapsaki and Güredsche, near mouth of Kara-Dere, *Conoclypeus conoideus* and columnals of ? *Bourgueticrinus*; TOULA (232) p. 67.

Jamaica, Cambridge formation, Catadupa beds, *Scutellina, Acrocidaris, Diplopodia, Echinolampas, Echinanthus, Pygorhynchus, Macropneustes*, and "*Rapinot pneustio*" [sic]; HILL (122) p. 128.

Lower Leigh Valley, Victoria, list of *Ech.*; DENNANT & MULDER (68) p. 86.—Limestone at Spud Point, near R. Aire, Victoria, *Ech.* (p. 39), Calder Limestones, *Ech.* (p. 45), Aire coastal sections, *Ech.*

(p. 47, 49), Castle Cove, *Ech.* and *Pentacr. stellatus* (p. 50); HALL & PRITCHARD (117).

(iii) MESOZOIC.

a. **General** :—Vacant.

b. **Cretaceous** :—

1. Upper:—

Spain, list of Echinoderms; MALLADA (167) pp. 161–167.—Mexico, *Ech.*; AGUILERA (1A) p. 215.

Danian:—Scandinavia, list of *Ech.* and *Crin.*; HENNIG (119) p. 149.

Danian and Senonian:—Rancocas, Monmouth, and Matanian formations, New Jersey, lists of *Ech.*, also *Pentacr.* and *Goniaster* from Rancocas; CLARK (59) pp. 179, 185, 189, and preliminary in CLARK (58).

Senonian:—Near Dorchester, *Ech.* and *Crin.* according to zones; JUKES-BROWNE in REID (195) pp. 9–16 and text-figg. 5–8.—Central Appennines 'Scaglia rosata,' *Ech.*; BONARELLI (42).—The Dahra, Algeria, *Bolbaster*; BRIVES (47) p. 19.—Egypt, *Rhabdocidaris crameri*; FOURTAU (96) p. 615.—Caucasus, *Crin.* and *Ech.*, see especially *Austinocr.*, *Ananchytes*, *Coraster*, *Inflataster*, *Stegaster*, *Prenaster*; ANTHULA (18) pp. 57–66. Upper Senonian,—Between Daridje and Eski-Hissar, Asia Minor, *Ananchytes ovatus*, *Holaster*, ?n. sp.; TOULA (232) p. 66.—Fanivelona, E. of Madagascar, *Balbaster*, *Epiaster*; BOULE (45) p. 133.—Yorkshire, *Ech.* as zonal fossils, range of *Marsupites*; LAMPLUGH (145) p. 31.—Middle Quarry at Beverley, Yorkshire, *Marsupites*; ANON (15).—From Hull's Quarry, Judge's pit, and Victoria Whiting Works, near Beverley, Yorkshire, *Marsupites*, *Ananchytes ovatus*; ANON. (16).—France, distribution of *Marsupites*; PERON (189) p. 510.—Horizon of *Actinocamax granulatus*, near Brunswick, *Cidaris* aff. *sceptrifera*, *Bourgueticr. ellipticus*, *Marsupites ornatus*; KLOOS (138).—Runge'schen Ziegelei, Brunswick, *Marsupites ornatus*; FRUCHT (99).—Algeria, *Marsupites* associated with *Hemiaster fourneli*, *H. asperatus*, *Holectypus serialis*, *Cyphosoma delamarrei*, *Goniopygus durandi*; PERON (189) p. 510.—"Hornstein des Aachener Waldes," *Hemiaster* and *Plesiaster* n. spp.; SCHLUETER (209) pp. 121, 123. Lower Senonian,—Firestone of Börssum and Königslutter in Brunswick, spines of *Cidaris clavigera*; KLOOS (139).—Börssum, spines of *Cidaris*, cf. *C. globiceps*; KNOOP (140).—"Oberen Mergel-schichten" of Ürmös in Siebenbürgen, *Stenonia*, *Cardiaster*; SIMIONESCU (215) p. 231.—Fletcher's chalk-pit, Gravesend, high-crested form of *Micraster coranguinum*, *Echinocorys vulgaris*, *Echinoconus conicus* and small rounded var., *Cyphosoma kœnigi*, *Cidaris perornata*, *C. sceptrifera*, *Goniaster*, *Ophiura* ?, *Bourgueticr. ellipticus*; DIBLEY (75).—Zones of *Micraster coranguinum*, *M. intermedius*, and partly *M. cortestudinarium*, near Louviers (Eure), list of *Ech.* incl. *M. cormarimum*; FORTIN (89).—Cliff between Tréport and Ault, *Micraster cortestudinarium* found by Geng; CAPON (51) p. 392.—Préaux, near Rouen, *Cardiaster cotteauanus*; CAPON (51) p. 391.—Alpes-maritimes, distribution of *Ech.*, occurrence of *Micraster leskei*, *M. heberti*, and *M. arcuatus*; RIAZ (198).—Extreme N. of Madagascar, *Lampadaster gauthieri*; BOULE (45) p. 130.

Blue Mountain Series, lower division, Jas
p. 118.

Senonian to Cenomanian, S. of England, analysis of *Micraster* zone by zone; ROWE (202).

Turonian:—Borders of the Wash, *Ech.*; WHITAKER & JUKES-BROWNE (251) p. 69.—Zone of *Holaster planus*, Cuxton, Kent, *Pentacrinus* and *Micraster* intermediate in form between *M. cor-bovis* and *M. coranguinum*; DIBLEY (76).—Gour Ouargla, Algeria, *Cyphosoma* and *Hemiaster*; ROLLAND (199) p. 46.—Zone of *Hemiaster fourneli* in Algeria, criticism of Welsch; PEROX (189) pp. 506–509.—*Holaster planus*, *H. placenta*?, *H.* sp., *Micraster* cf. *de lorioli*, *M.* sp., *Hemiaster* sp. from Mokošín, Valy, Lahn ob. Gruben, and Krchleb, in E. Bohemia; ŽELÍZKO (260).—Zone of *Inoceramus labiatus* at Glodu in Carpathians, *Cardiaster*, *Micraster*; ATHANASIU (20) p. 452.

Cenomanian:—Borders of the Wash, *Ech.*; WHITAKER & JUKES-BROWNE (251) p. 57.—Near Laghet, Alpes-maritimes, *Holaster subglobosus*, *Epiaster crassissimus*?; RIAZ (198) p. 413.—Roumania, *Ech.* spines and *Antedon* [!, q.v.]; POPOVICI-HATZEG (193) p. 4.—Lebanon, *Pygurus noetlingi*, n. sp.; LORIOL (154) p. 4.—Sinai, Wady Mokatteb, quoted by Duncan 1867, is not a locality for fossil *Ech.*; FOURTAU (96) p. 630. Upper Cenomanian,—Egypt, *Cidaris glandaria*, *Pseudocidaris pasqualii* n. sp., *Pseudodiadema meunieri* n. sp., *Orthopsis rupellii*, *Echinoconus aegyptiacus*, and many common spp.; FOURTAU (96), also (98).—El-Goléa, Algeria, *Rhabdocidaris pouyannei*, *Holectypus excisus*? (p. 55): Mechgarden, S.E. of El-Goléa, Algeria, *Hemiaster pseudo-fourneli*, *H. zitteli*, *H. africanus*?, *Pseudodiadema*? (p. 49): *Heterodiadema libycum*, a Carentonian species, from S. of Tripoli (p. 70); ROLLAND (199).

Albian, Red Chalk of Hunstanton, *Ech.*, *Crin.*; WHITAKER & JUKES-BROWNE (251) p. 42.—Gault at Miliana in Algeria, *Ech.*; BRIVES (47) p. 17.

2. Lower:—

Spain, list of Echinoderms; MALLADA (167) pp. 117–119.

Aptian, Upper Aptian, "marnes à *A. Nisus* et *A. furcatus*," "dans l'île Maïre aux environs de Marseille," *Toxaster*, *Echinospatagus*, and *Pentacr.* [i.e. *Isocr.*] n. sp.; REPELIN (197).—Aptian of Costas de Garraf, Spain, *Ech.* with nomina nuda of LAMBERT; ALMERA (11) p. 810.

Neocomian, Speeton Clay, Yorkshire coast, *Echinospatangus cordiformis*, *Cidaris*, and *Pentacr. annulatus*; LAMPLUGH (144) pp. 592, 596, 599, 602, 616.—Quadersandstein of Schusterberg and Gersdorfer Burg, *Toxaster complanatus*; MAAS (163) p. 249.

c. **Jurassic**:—Spain, list of Echinoderms; MALLADA (167) pp. 94, 95.—Yellowstone Park, Black Hills, and Utah, *Pentacr. asteriscus*, also fragmentary *Ech.* from Yellowstone; STANTON (221) pp. 603, 608, 609.—Mexico, *Crin.*, *Ech.*; AGUILERA (1A) p. 207.

1. Upper:—

Portlandian (=Tithonian); Red Limestone of Nesselsdorf in Bohemia is an Echinoderm facies of the Stramberg beds, list of *Echinoderma* incl. inter alia *Antedon* n. sp., *Cyathidium*, *Sclerocr. compressus*, *Tetracr.*, *Pentacr.*; REMEŠ (196).—Mte Judica in Catania, *Diadema*; NELLI (179) p. 54.—Mangychlak, Transcaspian, *Cidaris* and *Metaporhinus*; SEMENOV (212) p. 38.

2. Middle:—

Argovian,—"Corallien inférieur," Rauracian, "calcaire à polypiers, de sous-étage dicératien," partly as limestone, partly as argillaceous residue, at Mailly-le-Chateau and neighbouring localities in Dept.

l'Yonne, France, spines of *Cidaris*, *Rhabdocidaris*, *Diplocidaris*, *Hemicidaris*, *Acrocidaris*, descr. and figd. by VALETTE, account of deposit, and list of *Crin.* by PERON (237).

Oxfordian,—Of Tuar Kyr, Transcaspian, *Metaporhinus* and *Millericr.*; SEMENOV (212) p. 80.

Callovian,—Oberer Braune Jura, ε and ζ, of Baden, "Knorrithone" [! zone of *Ostrea knorri*], *Pentacr.*, *Asterias* (p. 728), "Variansschicht" [zone of *Rhynchonella varians*] *Pentacr.*, *Acrosalenia*, *Holectypus*, *Galeropygus*, *Collyrites* (p. 733), zone of *Amm. macrocephalus*, *Mespilocr.*, *Pentacr.*, *Asterias*, *Cidaris*, *Pseudodiadema*, *Holectypus*, *Galerites*, *Collyrites* (p. 751), "Ornatenthone" [zone of *Amm. ornatus*], *Holectypus* (p. 768); SCHALCH (208).

3. Lower:—

Bathonian,—"Ferrugineus-Schichten" of Vögisheim near Mullheim in Baden, *Dermaster boehmi* n. g. et sp.; LORIOL (155).—Bradfordian of Calvados, list of spp. of *Crin.*, and special account of horizon of *Isocr. nicoleti* and *Antedon schlumbergeri* near Lion-sur-mer, associated with *Goniaster* sp. and *Hemicidaris langrunensis*; BIGOT (39).

d. **Lias**:—Red limestone with *Pentacr.* near St Moritz; MOESCH (176 A).—Spain, list of Echinoderms; MALLADA (167) p. 73.

Middle and Lower,—*Am. capricornus* zone, *Pentacr. scalaris*, *Extracr. subangularis*, *Ophioderma*?, *Cidaris* sp.; *Am. henleyi* zone, *Pentacr. scalaris*; *Am. jamesoni* zone, *Pentacr. scalaris*; *Am. armatus* zone, *Pentacr. tuberculatus*, *Acrosalenia*?; *Am. oxynotus* and *raricostatus* zones, *Pentacr. tuberculatus*; *Am. turneri* zone, *Cidaris edwardsi*?: all between Rugby and Catesby, England; THOMPSON (229) p. 87.

e. **Trias**:—Spain, list of Echinoderms; MALLADA (167) p. 70.

Upper,—calcari rossi e grigi del Monte Clapsavon nella Carnia occidentale, *Encrinus*; TOMMASI (231) p. 9.

Middle,—Semmeringkalke, N.E. Alps, columnals of *Encrinus liliiformis* and *Pentacrinus*; TOULA (233).—Tschung-tjen, China, *Cidaris*, *Encrinus*; LÓCZY (149) pp. 159, 160.

(iv) PALÆOZOIC.

a. **General**:—Geological and geographical distribution of genera and spp. of *Cystidea*; JAEKEL (130) passim, esp. p. 144, of *Caryocrinidæ*, p. 304, of *Diploporita*, p. 366, of *Thecoidea* (=*Edrioasteroidea*), p. 26.

b. **Permian**:—Vacant.

c. **Permo-Carboniferous**:—Young-tschang-fu, Pu-pjao, and Talischau, in Yunnan, China, columnals referred [with too little hesitation] to *Poteriocr.* and *Cyathocr.*; Yarkalo in Lant-san-kiang valley, China, columnals of *Cyathocr.* [?], brachials of *Symbathocr*?; LÓCZY (149) pp. 116, 117, 123, 129, 132.

d. **Coal Measures**:—Upper Carboniferous of Teng-tjan-tsching near Kan-tschou-fu, China, columnals of *Cyathocr.* [?]; LÓCZY (149).

Topeka, Kansas, n. spp. *Oligoporus*? from Deer Creek limestone, *Erisocr.* from Osage coal, *Ceriocr.* from shales above Osage coal; BEEDE (30). Upper Coal Meas.,—stratum 97 of Pumpelly, Kansas City, Mo., *Ceriocr. nodulifera* [sic] and *Erisocr. toddanus*, n. spp.; BUTTS (50).

e. **Lower Carboniferous**:—Spain, list of Echinoderms; MALLADA (167) p. 60.—Carboniferous Limestone, Cape Cherni, Novaya Zemlya,

columnals which "may represent two such forms as *Poteriocrinus* and *Actinocrinus*"; NEWTON (180) p. 296.—Sa-men-qua Pass in Ta-tya-shan Mts., Kan-su, China, *Crin.* limestone; LÓCZY (149) p. 183, and LORENTHEY, p. 246.

Dimetian,—Zone of *Orthis resupinata*, Egypt, *Archaeocidaris* or *Eocidaris*; FOURTAU (96) p. 612.—Horizon *V1a* of Pair, in Clavier, Belgium, *Palechinus sphericus*; DESTINEZ (72).

Tournaisian,—Pair in Clavier, Belgium, *Platycr.* cf. *mullerianus* (p. 289), *Palaechinus koenigi* (p. 290), with complete list of *Ech.* and *Crin.* (p. 295); DESTINEZ (69): *Poteriocr.*; DESTINEZ (70).

Madison Limestone (about contemporary with Kinderhook), Yellowstone Park, U.S.A., *Platycr.*, *Scaphiocr.*; GIRTY (105) p. 515.

Lower Carboniferous (or ?Devonian) near La Ligua in Chile, *Poteriocr.*?; PHILIPPI (192).

f. **Devonian**:—Spain, list of Echinoderms; MALLADA (167) pp. 38, 39.

Milwaukee, Wis., list of *Crin.* and *Blast.*; MONROE & TELLER (177) p. 282.—Jeffersonville Limestone and Sellersburg beds of S. Indiana and central Kentucky, list of *Crin.* and *Blast.*, also Riverside Sandstone, *Catillocr.*, and Rockford Limestone, *Symbathocr.*; KINDLE (137) p. 49.

Upper,—*Dinocystis barroisi* comes from Assises d'Evieux et Monfort of Famennien supérieur, and not from Assise d'Esneux of Fam. infr.; BATHER (23).—Assise d'Esneux, at Tohogne, Belgium, *Protaster*; DESTINEZ (71).—Nehdener Schiefer at Nehden, and Saalfeld in Thuringia, *Cosmocrinus holzapfeli* n. sp.; JAEKEL (128) p. 32.

Middle,—Pilton beds of N. Devon and Somerset, spp. of *Lepidesthes*?, *Protocidaris* n. g., *Palaeaster*, *Drepanaster*? n. g., *Protaster*?, *Eugaster*?, *Ophiurella*?, *Pentremitidea*, *Codaster*, *Taxocr.*, *Rhodocr.*?, *Megistocr.*?, *Mariacr.*?, *Actinocr.*?, *Platycr.*?, *Adelocr.*, *Poteriocr.*?, *Scaphiocr.*?, *Scytalecr.*?, *Coeliocr.*?, many n. spp.; WHIDBORNE (250).—Zone of *Phacops potieri*, Ille-et-Vilaine, *Haplocr. boitardi*, *Hexacr.* sp.; KERFORNE (135) p. 344.

Hamilton Group, Western New York, lower Moscow shale, *Ancyrocr.*, *Habrocr.*, Hamilton shale, *Gennaeocr.*, *Dorycr.*?, *Platycr.*, *Taxocr.*, *Ancyrocr.*, et columnæ radicesque; GRABAU (107) p. 141–148.—Lower Moscow shale, *Taxocr.*, *Ancyrocr.*, *Hadrocr.*, Upper Hamilton shale, *Gennaeocr.*; GRABAU (108) p. 285, table iii.

Lower,—various locc. and horizons near the Lorelei, Rhineland, *Diamenocr.* (pp. 6, 13, 22, 48, 91), *Acanthocr.* (pp. 10, 57), *Cyathocr.* cf. *grebei* (p. 32), *Gastrocr.*? (p. 52), *Ctenocr.* (p. 57), *Culicocr.* (p. 57) and *Ech.*? (p. 57); FUCHS (100).—Bohemia, *Crin.* indet. vide sub *Encrinites* et *Entrochus*; WAAGEN & JAHN (246).—Corniferous of Ohio, *Nucleocr. verneuili*, *Codaster pyramidatus* at Marble Cliff (p. 16) and Columbus (p. 20), *C. pyramidatus* at Dublin (p. 21), *N. verneuili* at Marion (p. 27) and White House (p. 33), *Dolatocr. liratus* and *Megistocr. spinulosus* at Columbus (p. 20); BOWNOCKER (46).

g. **Silurian**:—S. Scotland, *Oph.*, *Crin.*, *Ech.*; PEACH (188) pp. 670, 687, 709.—Ludlow shales, Leintwardine, Shropshire, *Palaeasterina bonneyi*; GREGORY (111) p. 349.—Bohemia, *Beyrichocr.*, *Bohemicocr.*, *Calpiocr.*?, *Carolicr.*, *Ichthyocr.*, *Scyphocr.*, *Vletavicr.*, *Zenkericr.*, cum fragmentt. indett. sub *Encrinites* et *Entrochus*, with general tables, pp. 196 et sq.; WAAGEN & JAHN (246).—Silurian *f2* at Pleschiwetz, Bohemia, *Proteocystis flavus*; KAYSER & HOLZAPFEL (132) p. 505; K. & H. consider *f2* as Lower Devonian.—Base of *f2* Slatý Kun, Bohemia, columnals of *Crotalocrinus*; KAYSER & HOLZAPFEL (132) p. 507: this identification doubted by WAAGEN & JAHN (246) p. 140.

—Middle and Upper Silurian of Mukscha, Dumanov, and Kamenez-Podolsk in Podolia, *Crotalocr.* and *Crin.* indett.; VENYUKOV (239) p. 94.

Dolomite of Burnt or Mann Id. in L. Temiscaming, Canada, slabs of crinoidal limestone with crowns, referred to *Taxocr.*, *Dendrocr.*, *Thysanocr.*; AMI (12) pp. 292 i, 294 i.

Upper Trilobite bed of Wenlock Series at Bowning, N.S.W., *Sturtzaster mitchelli* n. sp.; ETHERIDGE (83).

h. **Ordovician**:—Spain, list of Echinoderms; MALLADA (167) p. 26.—Bohemia, *Caleidocr.* in *d* 4, cum fragmentt. indett. sub *Encrinites* et *Entrochus* in *d*, 1, 2, 4, 5; WAAGEN & JAHN (246).—China, Yunnan, *Hemicosmites*?; LÓCZY (149) p. 22.—S. Scotland, *Cyst.*, *Crin.*, *Ast.*; PEACH (188) pp. 670, 687, 698, 701.

Caradoc of Shropshire, *Palaeaster caractaci* n. sp.; GREGORY (111) p. 344.—Raheen Shales, = Llandeilo, of Newtown Head, co. Waterford, Ireland, *Cheirocrinus* cf. *penniger*, *Echinosphaera granulata*? (p. 723): Tramore Limestone, Stages 3 and 2, = Cystidean Limest. of Scandinavia, Tramore Bay, co. Waterford, *Echinosphaera*, *Bolboporites*, *Glyptocystis* (p. 732); REED (194).

Trenton, Galena series, St. Paul, Minn., *Strophocr. dicyclicus* n. g. et sp., *Lichenocr.*; SARDESON (207).—Trenton limestone, Mattawa, near Ottawa, *Crin.* columnals (p. 298 i): Trenton?, L. Nipissing, *Crin.* and *Cyst.* fragments (? *Palaeocystis*) (p. 300 i); AMI (12).

k. **Cambrian**:—Spain, list of Echinoderms; MALLADA (167) p. 23.—Fucoid shales, a band or ironstone in Allt nan Dearcaig near Achnashellach, Ross-shire, Scotland, "organic remains show structures resembling those of echinoderms," "not improbable that some...may be Cystideans"; HORNE (123).

Division *1* b, Long Id., Nova Scotia, *Trochocystis*; MATTHEW (171) p. 128.

l. **Pre-Cambrian**:—Etcheminian in Newfoundland and New Brunswick, fragments of *Cystidea*, also *Platysolenites*, which the author refers to *Crin.*; MATTHEW (170) p. 53.

IV. SYSTEMATIC†.

(A.)—ECHINODERMA IN GENERAL.

Echinoderma divided according to mode of feeding, into *Microphagi* and *Megophagi*; the latter into *Monorchida*, without buccal armature, and *Pentorchida* with buccal armature; *Pentorchida* again into *Helkopoda*, with tube-feet (*Ast.* and *Ech.*), and *Ophiuroidea*, with muscular arms; SOLLAS (216) p. 715: LAMBERT in Review points out that many *Ech.* have no more buccal armature than has a Holothurian.

According to origin of genital rachis, *Crin.* and *Hol.* are *Monorchonia*, while *Ech. Ast. Oph.* are *Pentorchonia*, thus differing from Haeckel's conception; RUSSO (204) p. 292.

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† A dagger prefixed to the trivial name of a species indicates that it is fossil; prefixed to the name of the author, it denotes that the reference is to the species in a fossil state; prefixed to the name of a genus, it indicates that all species of the genus here recorded are fossil, and the † is therefore not repeated before each name. The abbreviations *l. c.* and *op. cit.* refer only to the place or work quoted *immediately before*.

A name and reference quoted without further statement [*e.g. Actinopyga mauritiana*; BEDFORD (29)] indicate that the quoted author's statement refers merely to locality or some question of slight importance. Further information can usually be gleaned from the cross-references under TITLES.

Edrioasteroidea reinstated as a distinct Class of *Echinoderma*; BATHER (22) p. 917: called *Thecoidea*; JAEKEL (130).
Eleutherozoa, name extended and defined to incl. *Hol. Ech. Ast. Oph.*; BATHER (22) p. 917.
Helkopoda, **div. nov.** incl. *Asteroidea* and *Echinoidea*; SOLLAS (216) p. 714.
Megophagi, nom. nov. pro *Eleutherozoa*; SOLLAS (216) p. 715.
Microphagi, nom. nov. pro *Pelmatozoa*; SOLLAS (216) p. 715.
Pelmatozoa defined; BATHER (22) p. 919.

(B.)—HOLOTHURIOIDEA.

Achlyonice, redefined; HÉROUARD (121) p. 175.
Actinopyga echinites, colour in spirit (?); BEDFORD (29) p. 836. *A. lecanora*, podia (p. 149); *A. maculata* or ?*A. hadra* (p. 150): BEDFORD (28). *A. mauritiana*; BEDFORD (29) p. 835: podia, colour; BEDFORD (28) p. 149. *A. parvula*, incl. *Mulleria flavocastanea* Theel, specimens fr. Funafuti descr., spicules figd.; BEDFORD (29) p. 836, pl. lii.
Benthothuria funebris, diagnosed; R. PERRIER (191) p. 248.
Chiridota seu *Chirodota*:—*C. intermedia*, **n. sp.**, mangrove swamp, Funafuti; BEDFORD (29) P. Zool. Soc. London, 1898, p. 846, pl. liii. *C. lævis*; BIDENKAP (38) p. 106. *C. liberata*; BEDFORD (29) p. 845. *C. rigida*; BEDFORD (28) p. 143. *C. rotifera*, Bermuda; CLARK (56) p. 134. *C. rufescens*; LUDWIG (158); BEDFORD (28) p. 143.
Cucumaria assimilis, vide *Pseudocucumis africana*. *C. frondosa*; BIDENKAP (38) p. 106. *C. grubii*, breeding period, habitat; *C. planci*, breeding period, fissiparity, habitat: LO BIANCO (147) p. 475. *C. punctata*, colour and variations; CLARK (56) pp. 123, 124, 133. *C. syracusana*, breeding period, habitat; LO BIANCO (147) p. 475.
Elpidia, redefined, incl. *E. glacialis*, *E. abyssicola*, *E. echinata*; HÉROUARD (121) p. 174. *E. glacialis*, evidence for bipolarity; THOMPSON (230) p. 317. *E. incerta* and *E. purpurea*, v. sub *Peniagone*. *E. verrucosa*, v. sub *Scotoplanes*. *E. willemoesi*, v. sub *Peniagone*.
Elpidiinæ, revision of genera; HÉROUARD (121) p. 174, text fig. 4.
Euapta, vide sub *Synapta*.
Eunypniastes, redefined; HÉROUARD (121) p. 175.
Euphronides depressa, evidence for bipolarity; THOMPSON (230) p. 317.
Herpysidia, diagnosed, *H. reptans* [introduced as n. sp., but see Zool. Rec. 1898], diagnosed; R. PERRIER (191) p. 247.
Holothuria abbreviata, Heilprin from Bermuda, is *H. captiva*; CLARK (56) p. 125. *H. albiventer*, does not incl. *H. aculeata*, *H. bowensis*, or *H. modesta*; LUDWIG (158) p. 558. *H. atra*; LUDWIG (158) p. 559: var. *amboinensis*, variation in number of stone-canals and Polian vesicles; BEDFORD (28) p. 147: internal anatomy of 4 specimens compared; BEDFORD (29) p. 839. *H. captiva*, Bermuda; CLARK (56) pp. 125, 133. *H. cinerascens*, colour, variations in Polian vesicles, stone-canals, and Cuvierian organs; BEDFORD (28) p. 148. *H. decorata*, colour like *H. monacaria*, spicules; BEDFORD (28) p. 146. *H. difficilis*, measurements, colour in spirit (!); BEDFORD (29) p. 838, pl. lii. *H. difficilis* ?, perhaps allied to *Actinopyga parvula*; BEDFORD (28) p. 149. *H. edulis*; BEDFORD (28) p. 147: incl. *H. signata* Lampert and of Ludwig who described spicules upside-down; LUDWIG (158) p. 559. *H. floridana*, Heilprin from Bermuda non Pourtales, is *H. surinamensis*; CLARK (56) p. 122. *H. forskali*, breeding period, habitat; LO BIANCO (147) p. 475: Cuvierian organs; RUSSO (203). *H. fuscocinerea*, var. *pervicax*, measurements, variation of spicules; BEDFORD (29) p. 837, pl. lii. *H. huberti*, **n. sp.**, 1 metre, at C. St Elia,

G. of Cagliari, Sardinia, spicules and the numerous Polian vesicles figd., madreporites, lacunæ, colour, is associated with *H. tubulosa* and passage-forms between the two are found; RUSSO (205) Monit. Zool. Ital. x, p. 225. *H. helleri*, Cuvierian organs; RUSSO (203). *H. impatiens*; LUDWIG (158) p. 558: incl. *H. botellus* Sel.; BEDFORD (28) p. 145: measurements, colour in spirit (?), internal anatomy of 4 specimens compared; BEDFORD (29) p. 840: respiratory trees, anatomy and physiology; BORDAS (43): generative organs; BORDAS (44): Cuvierian organs; RUSSO (203). *H. intestinalis*, breeding period; AURIVILLIUS (21) p. 16. *H. lentiginosa* Marenz. perhaps a var. of *H. pardalis*; BEDFORD (28) p. 145. *H. lubrica*, Zanzibar; LUDWIG (158) p. 560. *H. maculata*; BEDFORD (28) p. 146, & (29) p. 842. *H. monacaria*; LUDWIG (158) p. 557; BEDFORD (28) p. 146: internal anatomy of 3 specimens compared; BEDFORD (29) p. 841. *H. nigra*, distribution, habitat, habits; ALLEN (8) p. 461. *H. pardalis*; LUDWIG (158) p. 559: probably incl. *H. subditiva*, measurements, colour, spicules; BEDFORD (29) p. 839: var. *insignis*, spicules; BEDFORD (28) p. 145. *H. rugosa*; BEDFORD (29) p. 839, pl. liii. *H. santori*, Cuvierian organs; RUSSO (203). *H. surinamensis* from Bermuda, compared with type, variations in number of tentacles and Polian vesicles; CLARK (56) pp. 121, 133. *H. thomsoni*, evidence for bipolarity; THOMPSON (230) p. 317. *H. tubulosa*, breeding period, habitat, commensal; LO BIANCO (147) p. 475: generative organs; BORDAS (44): respiratory trees, anatomy and physiology; BORDAS (43): vide etiam sub *H. huberti*. *H. vagabunda*; LUDWIG (158) p. 558; BEDFORD (29) p. 842: spicules; BEDFORD (28) p. 145, pl. xvii. *H. willeyi*, **n. sp.**, Blanche B., New Guinea; BEDFORD (28) p. 148, pl. xvii.

Irpa abyssicola, v. sub *Elpidia*.

Kolga seu *Kolge*:—redefined, incl. *K. hyalina*, *K. affinis*, *K. challengeri*, *K. furcata*, *K. insignis*, *K. naresi*, *K. obsoleta*, *K. porcellus*, *K. robusta*, *K. rosea*; HÉROUARD (121) p. 175. *K. furcata*, **n. sp.**, dredged by 'Princesse Alice,' Station 698; HÉROUARD (121) p. 171, text-fig. 2. *K. nana*, evidence for bipolarity; THOMPSON (230) p. 318: vide etiam sub *Scotoplanes*. *K. obsoleta*, **n. sp.**, dredged by 'Princesse Alice,' Station 753; HÉROUARD (121) p. 170, text-fig. 1.

Laetmogone wyville-thomsoni, evidence for bipolarity; THOMPSON (230) p. 318.

Leptosynapta Verrill, syn. of *Synapta*; CLARK (57) p. 22.

Mesothuria, modification of Ludwig's diagnosis (p. 244); *M. expectans* [sic], **n. sp.**, depth and locality not stated, no figure (Bull. Mus. Paris, 1899, p. 245); *M. intestinalis*, diagnosed (p. 244); *M. maroccana*, diagnosed (p. 245); *M. verrilli*, diagnosed (p. 245): R. PERRIER (191).

Orcula (? *Phyllophorus*) *dubia*, **n. sp.**, Lifu, Loyalty Is., no diagnosis, but spicules figd.; BEDFORD (28) p. 144, pl. xvii.

Paelopatides grisea, perhaps a var. of *P. confundens*; R. PERRIER (191) p. 248.

Parelpidia, redefined, incl. *P. elongata*, *P. cylindrica*; HÉROUARD (121).

Peniagone, redefined, incl. *P. wyvillei*, *P. atrox*, *P. azorica*, *P. horrifer*, *P. incerta*, *P. lugubris*, *P. purpurea*, *P. vitrea*, *P. willemoesi*; HÉROUARD (121) p. 175. *P. affinis*, *P. challengeri*, *P. naresi*, *P. porcellus*: v. sub *Kolga*.

Periamna roseum, v. sub *Kolga*.

Phyllophorus, v. sub *Orcula*. *P. urna*, breeding period, habitat; LO BIANCO (147) p. 476.

Pseudocucumis africana; LUDWIG (158) p. 561: incl. *Cucumaria assimilis* Bell and *P. theeli* Ludw.; BEDFORD (28) p. 144: variations in tentacular symmetry, compared with *P. mixta*, *P. acicula*, *P. inter-*

†*Amblypygus dilatatus*, a large specimen, the *Clypeus* (*Semi-clypeus*) *pretiosus* Mayer-Eymar, descr. and figd.; FOURTAU (96) p. 646, pl. i.

Amphidetus:—vide etiam *Echinocardium*. History of the genus, the name preferred to *Echinocardium*, its geol. distrib. with list of fossil spp. (pp. 111–114); *A. cordatus*, variation in measurements, diagnostic characters, incl. *Spatangus arcuarius* Lam. and *A. goldfussi* L. Ag. (p. 109): SCHLUETER (209). *A. gibbosus* cited by Fischer, 1869, from S.W. coast of France is perhaps *Echinocardium pennatifidum* and not *E. mediterraneum* as supposed by Ludwig, 1879; KOEHLER (141) p. 179. *A. mediterraneus*, diagnostic characters; SCHLUETER (209) p. 108. *A. ovatus*, breeding period; AURIVILLIUS (21) p. 14.

†*Amphiope*, discussed; AIRAGHI (4) p. 155. *A. arcuata*; FOURTAU (96) p. 698. *A. pedemontana*, n. n.; AIRAGHI (3) p. 248: **n. sp.**, Tongrian of Dego in Bormida basin; AIRAGHI (4) Boll. Soc. geol. Ital. xviii, p. 155, pl. vi. *A. truncata*, Walther's citation from Tor, Sinai, probably incorrect; FOURTAU (96) p. 697.

†*Ananchytes* seu *Ananchytis*:—vide etiam *Echinocorys*. *A. depressa*, specimen from Daghestan descr. and measured; ANTHULA (18) p. 59, pl. ii. *A. ovata*; ANTHULA (18) p. 60; TOULA (232) p. 66.

†*Anisaster gibberulus*; FOURTAU (96) p. 668 & (98) p. 197.

Arachnoides placenta; BELL (32) p. 136.

Arbacia; UEXKÜLL (235). *A. punctulata*, development of interambulacrals, variation in genital pores; JACKSON (127) p. 130, figs. 110, 111: effect of salt-solutions on ova; MORGAN (178) p. 449. *A. pustulosa*, breeding period, habitat; Lo BIANCO (147) p. 473.

Arbacina, vide *Psammechinus monilis*.

Archaeocidaris vel *Eocidaris* sp.; FOURTAU (96) p. 612.

Asthenosoma urens migrates from deep to shallow water at breeding period; SEMON (213) p. 508.

†*Astriclypeus integris* [*integer*] **n. sp.**, Tertiary sandstone of Midzuhomura, Kai province, Japan; YOSHIWARA (259) J. Geol. Soc. Tokyo, vi, p. 1, pl. ii.

†*Astrodapsis tumidus* (p. 166), *A. whitneyi* (p. 167) redescr.; MERRIAM (175) pl. xxi.

Astropyga elastica; *A. radiata*, including a "quite young specimen": BELL (32) p. 135.

†*Balbaster* [? err. pro *Bolbaster*] sp. nondescr.; BOULE (45) p. 133.

†*Bothriolampas*, **n. g.** an Eocene genus descended from the Cretaceous *Bothriopygus*, parallel to *Pliolampas*, and comparable to *Pygurostoma*, incl. 2 spp. *Pygorhynchus abundans* and *Pliolampas tunetana*; GAUTHIER in FOURTAU (96) p. 652: LAMBERT in Review doubts validity of genus, and states that in any case it is syn. of *Gitolampas* Gauth. *B. abundans* Mayer-Eymar (sub *Pygorhynchus* [1897, as *nom. nud.*, no other reference given, therefore this must be **n. sp.**]), Lower Suessonian of Gebel Garah near Assouan; GAUTHIER in FOURTAU (96) p. 655, pl. i.

Brissoma Pomel, vide sub *Brissopsis*.

Brissopsis includes *Toxobrissus* and *Brissoma*; FOURTAU (96) p. 668. †*B.* sp. ind.; AIRAGHI (4) p. 165. †*B. angusta*; FOURTAU (96) p. 666. †*B.* cf. *borsonii*; AIRAGHI (2) p. 371. †*B. fraasi*, a small specimen descr.; FOURTAU (96) p. 714. †*B. genei* var. *pliocenica* (p. 366); †*B.* cf. *intermedius* (pp. 369, 370); †*B. latissimus* (p. 366): AIRAGHI (2). †*B. lorioli* Bittner (sub *Toxobrissus*) redescr.; FOURTAU (96) p. 666, pl. i. *B. lyrifer*, breeding period; AURIVILLIUS (21) p. 15. †*B.* cf. *lyrifera* (p. 369); †*B.* cf. *lysetera* [sic] (p. 368); †*B. nicoleti* (p. 371); †*B.* aff. *ovatus* (pp. 370, 371): AIRAGHI (2). †*B. pasqualii* Mayer-Eymar, probably not *Brissopsis*; FOURTAU (96) p. 690. †*B. pecchiolii* (p. 367); †*B.* cf. *pecchiolii* (p. 368); †*B. ponteganensis*, **n. s.**, Pliocene

of Pontegana in Lombardy (p. 367, pl.-f. 7): AIRAGHI (2): is not *Brissopsis*, but ? *Brissus*; LAMBERT in Review.

†*Brissospatangus palejensis*, **n. sp.**, Paleo in Vicentin; MAZZETTI (173) Mem. Pont. Acc. Lincei, v, p. 15, pl. i.

Brissus:—†*B. aegyptiacus*, **n. sp.**, "Helvétien II, grès inférieurs avec *Echinoneus Artini* et les *Schizaster*" Gebel Geneffé, Egypt; GAUTHIER in FOURTAU (96) p. 718, pl. iii. †*B. corsicus*; AIRAGHI (4) p. 164. *B. unicolor*; CLARK (56) p. 132: breeding period, habitat; LO BIANCO (147) p. 473.

†*Caratomus londinianus*, redescr. and discussed; FOURTAU (96) p. 663.

†*Cardiaster*:—vide etiam sub *Scagliaster* et *Stegaster*. *C. cotteauanus*, found by R. Fortin at Préaux near Rouen, associated with *Echinocorys vulgaris*; CAPON (51) p. 391. *C. cretaceus* Sorign. sp. perhaps to be united with *C. pygmaeus* under *C. truncatus*; SCHLUETER (209) p. 118. *C. italicus*=*Infulaster* aus der Scaglia; ATHANASIU (20) p. 452. *C. minor*, distinct from *C. truncatus*; SCHLUETER (209) p. 119. *C. pseudo-italicus*, **n. sp.**, "oberen Mergel-schichten," Upper Cretaceous of Ürmös in Siebenbürgen, may be *Holaster*, *Stegaster* or *Scagliaster*, will be more fully descr. "in den Schriften der rumänischen Akademie der Wissenschaften"; SIMIONESCU (215) Verh. geol. Reichsanst. 1899, p. 231. *C. pustulifer* Peron & Gauth., based on a crushed specimen and is a *Guettaria*; GAUTHIER (102) p. 346. *C. pygmaeus* Forbes, possibly syn. of *C. truncatus*, but, if Wright's figure is correct, will stand and will be closer to *C. minor* than to French specimens usually assigned to *C. pygmaeus* (p. 116); *C. truncatus* Goldf. (sub *Spatangus*) redescr. from holotype and a second specimen from Dortmund, probably fr. Pläner-Mergel, zone of *Inoceramus labiatus*, perhaps incl. *Cardiaster pygmaeus* Forbes and *C. cretaceus* Sorignet (p. 114, pl. x): SCHLUETER (209).

†*Cassidulus*:—*C. amygdala*; FOURTAU (96) p. 663. *C. australiae*; HALL & PRITCHARD (117) pp. 49, 50.

Centrostephanus; UEXKÜLL (235).

Cidaris:—†*C.* sp.; SEMENOV (212) p. 38. †*C.* sp. indet., Mid. Trias of Tschung-tjen, China, fragments; LÓCZY (149) p. 159, pl. x. †*C. acicularis*, spines; AIRAGHI (4) p. 147. †*C. adamsi* (p. 692); †*C. avenionensis*, reference confirmed so far as spines alone permit (p. 693): FOURTAU (96). †*C. blumenbachi*, spines (p. 127); †*C. cervicalis*, spines, var. approaching *C. davoustiana* and var. with smooth sides, Rauracian, l'Yonne (p. 128, pl. i): VALETTE (237). †*C. clavigera*; KLOOS (139). *C. claviphoenix*, vide *Pseudocidaris pasqualii*. †*C. coronata*, doubtful in Rauracian of l'Yonne (p. 127); †*C. elegantulus*, **n. sp.**, Rauracian of Mailly-le-Chateau etc., Yonne, spines only, compared with *C. elegans* (p. 122, pl. i); †*C. florigemma*, spines, former confusion with *C. blumenbachi* (p. 126): VALETTE (237). †*C. gastaldii*, spine; AIRAGHI (4) p. 147. †*C. glandaria* of Egypt is Upper Cenomanian or Turonian; FOURTAU (96) p. 612. †*C.* cf. *globiceps*; KNOOP (140). †*C. granulata* (p. 127); †*C. icaunensis*, spines, redescr. (p. 132, pl. i); †*C. lineata*, spines, Cotteau's figures criticised, but specific identity of specimens from Algeria and l'Yonne admitted (p. 131); †*C. marginata*, spines (p. 124, pl. i): VALETTE (237). *C.* (*Eucidaris*) *metularia*; BELL (32) p. 134; LUDWIG (158) p. 550. †*C. propinqua*; VALETTE (237) p. 126. †*C.* aff. *sceptrifera*; KLOOS (138). †*C. spinosa*, spines, Rauracian of Mailly-le-Chateau, l'Yonne; VALETTE (237) p. 129, pl. i: perhaps a n. sp.; LAMBERT in Review. *C. tribuloides*; CLARK (56) p. 131. †*C. valfinensis*, spines, Rauracian of Mailly-le-Chateau, l'Yonne, descr. and compared with type; VALETTE (237) p. 133, pl. i. †*C. wrighti*; SEMENOV (212) p. 38.

†*Claviaster cornutus*, probably Cenomanian, probably not identical with

specimen from Dordonian of Beaumont in Charente Inf.; FOURTAU (96) p. 627.

Clypeaster:—†*C.* spp.; BOFILL Y POCH (41) p. 412. †*C. acclivis*, specimen from Egypt. descr. and compared with *C. pentadactylus*; FOURTAU (96) p. 709, pl. iv. †*C. aegyptiacus*; FOURTAU (96) p. 200: redescr., distrib., probably incl. *C. pliocenicus* Seguenza; FOURTAU (96) p. 721. †*C. altus* Abich non Lam., discussed; GREGORY (112) p. 422. †*C. beaumontii*, measurements; AIRAGHI (4) p. 179. †*C. breunigii*; FOURTAU (96) p. 645. †*C.* (?) *breweriamus* Rémond as *Echinarachnius*, redescr.; MERRIAM (175) p. 166, pl. xxi. †*C. gabbi*, vide sub *Scutella*. †*C. geneffensis*, **n. sp.**, "Helvétien II, couches à *Cl. isthmicus*," Gebel Geneffé, Egypt; GAUTHIER in FOURTAU (96) p. 705, pl. iii. †*C. guentheri*, **n. sp.**, Miocene, L. Urmi, N.W. Persia, incl. *C. turritus* Abich non Philippi and probably *C. altus* Fischer non Lam. (p. 420, pl. xxviii); †*C.* aff. *imperialis*, measured (p. 419, pl. xxviii): GREGORY (112). †*C. isthmicus*, redescr.; FOURTAU (96) p. 702. †*C. cfr. laganoides*, measurements; AIRAGHI (4) p. 154. †*C. martini*, L. Urmi, measured; GREGORY (112) p. 422. †*C. michelinii*; †*C. michelottii*, slight variation from type: AIRAGHI (4) p. 150. †*C. paronai*, n. n.; AIRAGHI (3) p. 247: **n. sp.**, Tongrian of Carcare in Bormida basin; AIRAGHI (4) Boll. Soc. geol. Ital. xviii, p. 152, pl. vi. †*C. pentadactylus* from Egypt compared with Algerian specimens; GAUTHIER in FOURTAU (96) p. 708, pl. iv. †*C. pentagonalis*, redescribed (p. 151, pl. vii); †*C. placenta*, measurements (p. 150): AIRAGHI (4). †*C. priemi*, **n. sp.**, "Helvétien II en-dessous des grès à *Ostrea vestita* et à *Echinolampas amplus*" Gebel Geneffé, Egypt; GAUTHIER in FOURTAU (96) p. 703, pl. iii. †*C. rholfsi* [err. pro *rohlfsi*]; FOURTAU (96) p. 701. *C. rosaceus*; HAECKEL (115) pl. xxx. †*C. subplacunarius*, compared with living specimens; FOURTAU (96) p. 702. †*C. taramellii*, n. n.; AIRAGHI (3) p. 247: **n. sp.**, Tongrian of Cairo Montenotte in Bormida basin; AIRAGHI (4) Boll. Soc. geol. Ital. xviii, p. 153, not figd.: why not a *Plesianthus*?; LAMBERT in Review.

†*Clypeus* (*Semi-clypeus*) *pretiosus* Mayer-Eymar referred to *Amblypygus dilatatus*; FOURTAU (96) p. 647.

†"*Codiopsis*, n. sp." Zittel, Cenomanian, Egypt; FOURTAU (96) p. 620.

†*Conoclypeus*:—*C. conoideus*; TOULA (232) p. 67: de Loriol's determination of Egyptian specimen confirmed; FOURTAU (96) p. 645. *C. delanouei*; FOURTAU (96) p. 646. *C. plagiosomus*; UGOLINI (236).

†*Coptosoma alexandri*, n. n.; AIRAGHI (3) p. 251: **n. sp.**, Aquitanian sands of Acqui in Bormida basin; AIRAGHI (4) p. 147, pl. vi: name should be *De Alexandrii*; VINASSA DE REGNY in Review [but discoverer's name is de Alessandri].

†*Coraster vilanovae*, from Transcaspian and Daghestan, descr. and measured; ANTHULA (18) p. 61, pl. ii.

†*Cyclaster archeri*; HALL & PRITCHARD (117) p. 39.

†*Cyphosoma*:—? *C.* sp.; AIRAGHI (2) p. 363. *C. abbatei*, **n. sp.**, Lower Senonian, near Ghizeh, equals the small *Pseudodiadema* of J. Walther, 1888; GAUTHIER in FOURTAU (96) p. 620, pl. i: see also FOURTAU (98) p. 193: referred by LAMBERT in Review to his genus *Heteractis*, which Gauthier does not accept. *C. choisyi*, **n. sp.**, Turonian of Gour Ouargla, Algeria; G. H. COTTEAU in ROLLAND (199) p. 46, pl. xxvii. *C.* cf. *loryi*; ANTHULA (18) p. 58.

Diadema setosum; CLARK (56) p. 131; LUDWIG (158) p. 552: as a protector of young fish; SEMON (213) p. 504.

†*Dictyopleurus haimei*, doubtful, from Mokattam, Egypt; FOURTAU (96) pp. 639, 732, & (98) p. 197.

†*Diplocidaris gigantea*, various types of spines, and a var. which *if* **n. sp.**

is to be called *D. icaunensis*, Rauracian of l'Yonne; VALETTE (237) p. 139, pl. i.

†*Diplopodia*:—*D. sinaica* and *D. variolaris*; FOURTAU (96) p. 619.

†*Discoidea* seu *Discoides*, general scheme of periproctal plates (p. 21); *D. forgemolli*, periproctal plates (p. 22); *D. inferus* preserving plates of periproct which are descr. and figd. and shown to resemble those of *D. minimus* of which this sp. may therefore be a syn.; *D. minimus* of Michelin coll. cited by Agassiz Catal. systemat. p. 7, comes from Orcher in Gonfreville-l'Orcher (Seine-Inf.) and not from Dept. Orne (p. 21), the periproctal plates of the species (p. 22): LAMBERT in FORTIN (91). *D. pulvinata*; FOURTAU (96) p. 626. *D. subuculus*, periproctal plates; LAMBERT in FORTIN (91) p. 22.

†*Ditremaster nux*, vide sub *Hemiaster pellati*. *D. schweinfurthi* vide sub *Hemiaster*.

Dorocidaris; UEXKÜLL (235). *D. canaliculata*, from Zanzibar, fide A. Agassiz MS. label; LUDWIG (158) p. 550. *D. papillata*; †AIRAGHI (2) p. 362, pl.-f. 1: breeding period, habitat, commensals, varieties according to depth; LO BIANCO (147) p. 473.

†*Echinanthus*:—*E. camerinensis*; UGOLINI (236). *E. libycus*; FOURTAU (96) p. 652. *E. oosteri*; AIRAGHI (4) p. 156. *E. zitteli*; FOURTAU (96) p. 651.

Echinarachnius:—†*E. brewerianus*, vide sub *Clypeaster*. *E. excentricus*, Quaternary of California (p. 170, pl. xxii); †*E. gibbsi* Remond as *Scutella*, redescr. (p. 169, pl. xxii): MERRIAM (175). *E. parma*, breeding period; BUMPUS (49): effect of salt-solutions on ova; MORGAN (178) p. 496.

†*Echinobrissus*:—*E. pseudominimus*; FOURTAU (96) p. 626. *E. vincentianus*; HALL & PRITCHARD (117) p. 49.

Echinocardium:—vide etiam *Amphidetus*. The genotype should be *Spatangus atrops* Lam., which is also genotype of *Moera* Michelin; SCHLUETER (209) p. 110. †*E.* sp. nondescr., Pliocene, Egypt; FOURTAU (96) p. 723, & (98) p. 201. *E. cordatum*, distribution, habitat, habits; ALLEN (8) p. 476: breeding period, habitat; LO BIANCO (147) p. 474. *E. flavescens*, redescr. in detail, from specimens of various sizes, and compared esp. with *E. pennatifidum*; KOEHLER (141) p. 180, pl. iv. *E. mediterraneum*; CONDORELLI (61) p. 36: breeding period, habitat; LO BIANCO (147) p. 474: redescr. in detail and compared with *E. cordatum*, *E. flavescens* and *E. pennatifidum*; KOEHLER (141) p. 175, pl. iv.

†*Echinoconus*:—*E. aegyptiacus*, Upper Cenomanian or Turonian of Attaka or Abou Daragué, Egypt; FOURTAU (96) p. 626. *E. conicus*, a small rounded var.; DIBLEY (75). *E. globulus*; ANTHULA (18) p. 59. *E. magnificus*, from Gaillon, measured; FORTIN (90) p. 386.

†*Echinocorys*:—vide etiam *Ananchytes*. *E. ovatus*, cited by Zittel, from Garumnian of the Oases, but doubtful; FOURTAU (96) p. 632. *E. vulgaris*, crystallography of plates; CESÀRO (54) p. 99.

Echinocyamus pusillus; HAECKEL (115) pl. xxx: breeding period; AURIVILLIUS (21) p. 15: distribution, habitat, food; ALLEN (8) p. 474. †*E. pyriformis*, very small specimens approaching *E. affinis*; AIRAGHI (4) p. 148. †*E. thuilei*, **n. sp.**, Helvetian II, Gebel Geneffé, Egypt; GAUTHIER in FOURTAU (96) p. 696, pl. ii.

†*Echinocystis*, vide etiam sub *Protocidaris*. *E. pomum*, jaws discussed, ambulacra described and figd.; SOLLAS (216) p. 707.

Echinodiscus biforis, from Lamu and Madagascar; LUDWIG (158) p. 556.

†*Echin lampas*:—*E.* sp. non-descr. Fuchs, allied to *E. hemisphaericus* and *E. pyramidalis*; FOURTAU (96) p. 712, and (98) p. 201. †*E.* sp., Pliocene, Egypt; FOURTAU (96) p. 723. *E. affinis*, measurements and variations; AIRAGHI (4) p. 158. *E. africanus*; FOURTAU (96)

p. 657, and (98) p. 197. *E. amplus*, variations in size (p. 711); *E. amygdala* (p. 660); *E. amygdalina* Mayer-Eymer is the *E. globulus* var. *minor* of de Loriol (p. 662): FOURTAU (96). *E. angulatus*; UGOLINI (236). *E. aschersoni*; FOURTAU (96) p. 661. *E. cassinellensis*, **n. sp.**, Oligocene, Cassinella, Piedmont, perhaps = *E. laurillardi* cited by Desor, 'Synopsis' p. 307, compared also with *E. perrieri*, *E. blainvillei*, *E. dumasi*, and *E. lovisatoi*; LORIOL (154) p. 5, pl. i. *E. cherichirensis*, **n. sp.** for specimens collected by Thomas in Tunis and hitherto referred by Gauthier to *E. perrieri*; GAUTHIER in FOURTAU (96) p. 732. *E. crameri*; FOURTAU (96) p. 661, and (98) p. 197. *E. escheri*, measurements, distinguished fr. *E. eurysomus* (p. 158); *E. eurysomus*, measurements, distinguished from *E. calvimontanus* (p. 157): AIRAGHI (4). *E. fraasi*; FOURTAU (96) p. 658, and (98) p. 197. *E. galerus*, **n. sp.**, Fumana, Vicentin; MAZZETTI (173) Mem. Pont. Acc. Lincei, v, p. 13, pl. i. *E. globulus*; FOURTAU (98) p. 197: Egyptian localities corrected; FOURTAU (96) p. 660: measurements; AIRAGHI (4) p. 159, pl. vi. *E. laurillardii* Agass. non Laube nec Wright, redescr., measurements; AIRAGHI (4) p. 161, pl. vi. *E. libycus* and *E. miniehensis* (p. 662); *E. perrieri*, redescr., Egyptian localities (p. 659): FOURTAU (96). *E. plagiosomus* Agass. non Laube; AIRAGHI (4) p. 162. *E. osiris*, type locality "Montradan" is probably Mokattam (p. 658); *E. praecedens*, very close to *E. amygdalina* (p. 663): FOURTAU (96). *E. similis*, measurements (p. 160); *E. studeri* (p. 157): AIRAGHI (4). *E. subcylindricus*; FOURTAU (96) p. 662.

Echinometra lucunter; BELL (32) p. 136; LUDWIG (158) p. 554: channels in coral-reefs; AGASSIZ (1) p. 118, pl. xxx. *E. subangularis*, colour; CLARK (56) pp. 117, 132.

†*Echinoneus artini*, **n. sp.**, Helvetian II, Gebel Geneffé, Egypt, compared with *E. thomasi*; FOURTAU (96) p. 695, pl. ii. †*E. thomasi*; GAUTHIER in FOURTAU (96) p. 696, pl. ii. *E. semilunaris*; CLARK (56) p. 132.

†*Echinopsis libycus*; FOURTAU (96) p. 640.

†*Echinospatangus cordiformis*; LAMPLUGH (144) pp. 596, 599, 602, 616.

Echinothrix desori, Zanzibar, incl. *E. calamaris* Pfeffer 1896, and *E. annellata* Peters, 1854; *E. turcarum*, Zanzibar, incl. *Diadema calamare* v. Martens 1869: LUDWIG (158) p. 553.

Echinus:—†*E.* sp.; AIRAGHI (2) p. 363. *E. acutus*; UEXKÜLL (235): pedicellariæ; UEXKÜLL (234): distribution, habitat, habits; ALLEN (8) p. 472: breeding period, habitat; LO BIANCO (147) p. 474. *E. esculentus*; BIDENKAP (38) p. 111: distribution, habitat, habits, food; ALLEN (8) p. 472: breeding period; AURIVILLIUS (21) p. 14: early development; MACBRIDE (166). †*E.* aff. *hungaricus*; AIRAGHI (2) p. 364, pl.-f. 4. †*E.* aff. *margaritaceus*; AIRAGHI (2) p. 364, pl.-f. 3: seems to LAMBERT in Review very different. *E. melo*, pedicellariæ; UEXKÜLL (234). *E. microtuberculatus*, pedicellariæ; UEXKÜLL (234): breeding period, habitat; LO BIANCO (147) p. 474: death-temperature; VERNON (241): astrosphere in immature ova; STRICHT (225 A). *E. miliaris*, distribution, habitat, habits, food; ALLEN (8) p. 474: breeding period: AURIVILLIUS (21) p. 14: early development; MACBRIDE (166). *E. verruculatus*, probably incl. "E. angulosus (Leske)" of A. Agassiz 1872 from Mozambique; LUDWIG (158) p. 555.

Encope emarginata; HAECKEL (115) pl. xxx.

†*Epiaster* :—vide etiam sub *Micraster*. *M. distinctus*; FOURTAU (96) p. 631. †*E. nutrix* nom. nud.; BOULE (45) p. 133.

Eucidaris, vide sub *Cidaris*.

†*Eupatagus* seu *Euspatangus*, redefined; GAUTHIER in FOURTAU (96) p. 678. *E. bicarinatus*, **n. sp.**, Bartonian of Poleo near Schio; MAZZETTI (172) Mem. Pont. Acc. Lincei, v, p. 12, pl. i. *E. cairensis*,

discussed; FOURTAU (96) p. 686. *E. cor*, **n. sp.**, Bartonian of Poleo near Schio; MAZZETTI (172) Mem. Pont. Acc. Lincei, v, p. 14, pl. i. *E. coranguinum*; HALL & PRITCHARD (117) p. 50. *E.* cf. *de koninckii* incl. *E. navicella* and *Maretia grignonensis* of Botto-Micca; AIRAGHI (4) p. 176, pl. vi: neither is it *E. de konincki* if Wright's figures are correct; LAMBERT in Review. *E. elatus*, **n. sp.** and var., Bartonian of Poleo near Schio; MAZZETTI (172) Mem. Pont. Acc. Lincei, v, p. 13, pl. i. *E. elongatus* ?, Bartonian; MAZZETTI (172) p. 16. *E. formosus*; FOURTAU (98) p. 197, redescr. with **var. nov.** *quadratus*, Lutetian I, Egypt (p. 685); *E. libycus*, redescr. (p. 687): FOURTAU (96). *E. ornatus*; AIRAGHI (4) p. 176. *E. rotundus*; HALL & PRITCHARD (117) pp. 39, 45. *E. tellinii*, **n. sp.**, Bartonian of Poleo near Schio; MAZZETTI (172) Mem. Pont. Acc. Lincei, v, p. 15, pl. i. *E. tuberosus*; FOURTAU (96) p. 686.

†*Fibularia*:—*F. acuta*, **n. sp.**, Pliocene of Ōji near Tokyo, Japan; YOSHIWARA (259) J. Geol. Soc. Tokyo, vi, p. 4. *F. lorioli*; FOURTAU (98) p. 197: redefined; FOURTAU (96) p. 641.

†*Gisopygus* **n. g.** for four spp. referred by de Loriol to *Rhynchopygus* (p. 648), viz. *G. navillei* redescr. (p. 649), *G. siutensis*, *G. thebensis*, *G. zitteli* (p. 650); FOURTAU (96): LAMBERT in Review does not see how this differs from *Plagiopygus*.

†*Gitolampas*, vide sub *Bothriolampas*.

†*Guettaria* (olim *Cardiaster*) *pustulifera* compared with *G. danglesi*; GAUTHIER (102) p. 346.

†*Hemiaster*:—*H.* sp.; MAZZETTI (172) p. 19; ŽELÍZKO (260) p. 534. *H.* sp. nondescr. aff. *H. africanus*; FOURTAU (98) p. 194. *H. africanus* ?; ROLLAND (199) p. 49, pl. xxvii. *H.* (?) *aquisgranensis*, **n. sp.**, "Hornstein des Aachener Waldes," distinguished fr. *Plesiaster bucardium*; SCHLUETER (209) p. 123, pl. x. *H. archiaci*, distinguished from *H. bowerbanki*, and probably not *Trachyaster* (p. 664); *H. batnensis* (p. 629); *H. cubicus*, difference of form according to age (p. 628): FOURTAU (96). *H. fourneli*; FOURTAU (98) p. 193 and (96) p. 631. *H.* (*Periaster*) *fourtaui* Mayer Eymar, validity doubted (p. 689); *H. gracilis* ? cited by Duncan from Sinai, is perhaps not this sp. (p. 630); *H. heberti* (p. 629); *H.* (*Periaster*) *nubicus* Mayer-Eymar (p. 690); *H. pellati*, quoted by de Loriol from Mokattam, if really rightly referred, should be called *Ditremaster nux* (p. 664): FOURTAU (96). *H. planedeclivis*; HALL & PRITCHARD (117) p. 50. *H. proclivis*; FOURTAU (96) p. 630. *H. pseudo-fourneli*; ROLLAND (199) p. 49, pl. xxvii. *H. schweinfurthi* is a *Ditremaster* (p. 665); *H. wilcocksi* Mayer-Eymar, possibly *Ditremaster* (p. 689): FOURTAU (96). *H. zitteli*; ROLLAND (199) p. 49, pl. xxvii.

†*Hemicidaris*:—*H. agassizi*, spines, syn. *H. diademata*, and *H. cartieri* (p. 145, pl. i); *H. crenularis*, spines (p. 143); *H. intermedia*, spines compared with *H. crenularis* (p. 144): VALETTE (237). *H. langrunensis*, with spines and jaws in place, Bradfordian, Lion-sur-mer; BIGOT (39) p. 67.

†*Hemipneustes italicus*; ANGELIS D'OSSAT (14) p. 64: redescr., horizon discussed; AIRAGHI (4) p. 163, pl. vii, p. 163: the sp. is certainly not a *Hemipneustes*, but genotype of *Toxopatagus* Pomel, systematic position discussed; LAMBERT in Review.

†*Heteractis* Lambert, validity doubted; GAUTHIER in FOURTAU (96) p. 622: vide etiam sub *Cyphosoma*.

Heterocentrotus trigonarius; BELL (32) p. 136.

†*Heterodiadema libycum*; FOURTAU (96) p. 618.

Hipponoë esculenta; CLARK (56) p. 132.

†*Holaster*:—vide etiam *Stegaster*. *H.* ? sp. nondescr.; TOULA (232) p. 66. *H.* sp.; ŽELÍZKO (260) p. 534. *H.* cf. *cordatus*; ANTHULA (18) p. 64.

H. placenta? (p. 541); *H. planus* (p. 537): ŽELÍZKO (260). *H.* sp. ind. aff. *senonensis*; ANTHULA (18) p. 64.

†*Holectypus*, periproctal plates; LAMBERT in FORTIN (91) p. 22. *H. cenomanensis* and *H. crassus*; FOURTAU (96) p. 625. *H. excisus*; FOURTAU (98) p. 194 and (96) p. 624. *H. macropygus*; ANTHULA (18) p. 59.

Hypsaster, vide *Schizaster roemeri*.

†*Hypsospatangus*, redefined; GAUTHIER in FOURTAU (96) p. 678. *H. ammon* redescr., horizon doubtful; FOURTAU (96) p. 679. *H. carenatus*, **n. sp.**, Montecchio maggiore, Vicentin; MAZZETTI (173) Mem. Pont. Acc. Lincei, v, p. 9, pl. i. *H. ficheri*, subanal fasciole discussed (p. 681); *H. lefebvrei*, has it a subanal fasciole? (p. 680): FOURTAU (96). *H. peroni*, redescr.; MAZZETTI (173) p. 10, pl. i. *H. pentagonalis*, **n. sp.**; Bartonian of Poleo near Schio; MAZZETTI (172) Mem. Pont. Acc. Lincei, v, p. 10, pl. i.

Iheringiana, **nom. nov.** pro *Iheringiella* Berg, non *Iheringella* Pilsbry; BERG (35) Commun. Mus. Buenos Aires, i.

Iheringiella, **nom. nov.** pro *Iheringia* Lahille 1898, non Keyserling 1891; BERG (34) p. 16.

Iheringina **nom. nov.** pro *Iheringia* Lahille non Keyserling [preocc. autem *Iheringiana* q.v.]; LAHILLE (143) p. 395.

†*Inflaster* **n. g.** with genotype *H. abichi*, **n. sp.**, Senonian, Daghestan, allied to *Offaster*; ANTHULA (18) p. 62, pl. ii.

†*Lambertia*, **n. g.** of *Spatangidæ*, group *Breyninæ*, with genotype *L. gardinalei*, **n. sp.**, Priabona Beds, near Lonigo, Vicenza, Italy; OPPENHEIM (186): discussed by LAMBERT in Review. [Nom. preocc. Desvoidy, 1863.]

†*Lampadaster gauthieri*; BOULE (45) p. 130.

Leiocidaris :—†*L. australis*; HALL & PRITCHARD (117) pp. 47, 50. *L. baculosa* (p. 551); *L. imperialis*, incl. *Cidaris dubia* Brandt and *C. fustigera* A. Ag. (p. 552); *L. verticillata* (p. 551): LUDWIG (158).

†*Leiopedina* sp.; AIRAGHI (2) p. 362, pl.-f. 2.

†*Lepidechinus rarispinus*, development of interambulacra; JACKSON (127) p. 132.

†*Lepidesthes*, compared with *Pholidocidaris*, *Perischodomus*, and *Hybechinus* (p. 199); *L. devonicans*, Pilton Beds, N. Devon, in Mus. Pract. Geol., and from Croyde in Whidborne coll. now first descr. and figd. (p. 200, pls. xxiv, xxv): WHIDBORNE (250).

†*Linthia* :—*L.* sp.; MAZZETTI (172) p. 18. *L. aschersoni* and *L. arizensis*; FOURTAU (96) p. 671. *L. capellinii*; AIRAGHI (4) p. 165. *L. cavernosa* (p. 670); *L. delanouei* (p. 669); *L. esnehensis* (p. 671); *L. hessi* Mayer-Eymar (p. 690); *L. latisulcata* (p. 670): FOURTAU (96). *L. lorioli*, n. n.; AIRAGHI (3) p. 249: **n. sp.**, Tongrian of Carcare in Bormida basin; AIRAGHI (4) Boll. Soc. geol. Ital. xviii, p. 166, pl. vii. *L. navillei*, validity of species confirmed by subsequent finds; FOURTAU (96) p. 670. *L. nipponica*, **n. sp.**, Tertiary of Kanazawa and Sakae, Japan; YOSHIWARA (259) J. Geol. Soc. Tokyo, vi, p. 2. *L. nobilis*, **n. sp.**, Colli Berici, Vicenza; MAZZETTI (173) Mem. Pont. Acc. Lincei, v, p. 12, pl. i. *L. oblonga*, the locality Gebel Garèbe given by the collector Lefèbvre to d'Orbigny is unknown; FOURTAU (96) p. 631.

†*Lovenia* :—*L.*? sp., Miocene of Gebel Geneffé, Egypt; FOURTAU (96), p. 720. *L. forbesi*; HALL & PRITCHARD (117) pp. 39, 49.

†*Macropneustes*, general discussion of the group of allied genera; definition of genus (p. 677). *M. schweinfurthi* Mayer-Eymar, perhaps not a *Macropneustes* (p. 691); *M. sickenbergeri* Mayer-Eymar, discussed, possibly a *Megapneustes* (p. 691); *M. similis* Mayer-Eymar, apparently accepted (692): FOURTAU (96).

†*Maretia* :—*M. depressa*; FOURTAU (96) p. 688. *M. pareti*; AIRAGHI (2)

p. 375 pl.-f. 10. *M. pendula*, horizon and locality of type discussed; FOURTAU (96) p. 688.

†*Megapneustes* **n. g.** with genotype *M. grandis*; GAUTHIER in FOURTAU (96) p. 678; LAMBERT in Review points out resemblance to *Stomoporus*. *M. crassus*, redescr.; FOURTAU (96) p. 684. *M. grandis*, **n. sp.**, Upper Suessonian of Gebel Drounka near El-Syout; GAUTHIER in FOURTAU (96) p. 681, pl. ii.

Mellita sexforis, colour; CLARK (56) pp. 117, 132.

†*Melonechinus*, vide sub *Melonites*.

†*Melonites* preocc. Lamarck, 1827, for *Foraminifer*, replaced by *Melonechinus*, Meek & Worthen, 1866; LAMBERT in Review of JACKSON (127). *M. multiporus*, variations in interambulacra; JACKSON (127) p. 131.

Mespilia globulus; BELL (32) p. 135.

Metalia sternalis, Aldabra Id.; LUDWIG (158) p. 556: ? Funafuti; HEDLEY (118 A) p. 530.

†*Metaporhinus* sp.; SEMENOV (212) pp. 39, 80.

†*Micraster*:—*M.* sp.; ŽELÍZKO (260) pp. 537, 543. *M.* sp. Zittel, Aturian, Egypt; FOURTAU (96) p. 632. *M. arenatus*; RIAZ (198) pp. 418, 425. *M. breviporus*; ANTHULA (18) p. 65: the type-cast is a young *M. coranguinum*; ROWE (202) p. 525. *M. brongniarti*, var. *sismondae*, is not *M. glyphus* Schlüt.; RIAZ (198) p. 417. *M. cor-anguinum*, high-crested form; DIBLEY (75): discussed; ROWE (202) p. 538, pls. XXXV–XXXVII: var. *latior*, **n. var.**; ROWE (202) p. 539, pls. XXXV–XXXVII. *M. cor-bovis*, redescr., with formae *gibbosa*, *carinata*, *planidorsata*, et *normanniae*, neanic stage, and passage-forms to *M. leskei*; ROWE (202) pp. 518–524, pls. XXXV, XXXVIII, XXXIX. *M. cormarinum*, first occurrence in Normandy, description and comparison with *M. coranguinum* and allies and *M. glyphus*; LAMBERT in FORTIN (89) p. 358, pl. ii [see under II, A, iii]. *M. cor-testudinarium* Goldf. discussed, and *M. cor-testudinarium* Auctt., redescr., with formae *gibbosa*, *carinata*, *planidorsata*, *normanniae*, et *beonensis* (p. 534, pl. XXXV); *M. decipiens*, discussed (pp. 534, 535): ROWE (202). *M.* cf. *de lorioli*; ŽELÍZKO (260) p. 534. *M. gibbus*; ATHANASIU (20) p. 452; RIAZ (198) p. 417. *M. gosseleti*, discussed; ROWE (202) p. 535. *M. heberti*; RIAZ (198) p. 428. *M. intermedius*, discussed; ROWE (202) p. 537. *M. leskei*, RIAZ (198) p. 428: redescr., with formae *gibbosa*, *carinata*, *planidorsata*, *normanniae*, et *beonensis*, and passage-form to *M. praecursor*; ROWE (202) p. 525, pls. XXXV, XXXVI, XXXVIII. *M. praecursor*, **nom. nov.**, a group of individuals occurring in the Chalk of S. England from zone of *Holaster planus* to the lower third of *M. cor-anguinum* zone, "even in its restricted sense, it cannot rightly be called a species"; ROWE (202) pp. 496, 530, pls. XXXV, XXXVI, XXXVII. *M. turonensis*, discussed; ROWE (202) p. 535. *M.* (*Epiaster*) *ultimus* Mayer-Eymar, validity doubted; FOURTAU (96) p. 689.

†*Micropsis*:—*M. fraasi* (p. 639); *M. mokattamensis* (p. 640): FOURTAU (96).

†*Mistechinus*, validity of genus doubted (p. 641); *M. mayeri* de Loriol, the types are young, an older specimen discovered near Minieh (p. 732): FOURTAU (96).

Moera Michelin, v. sub *Echinocardium*.

†*Myriastiches*, **n. g.** of *Cystocidaroida* (?), with genotype *M. gigas*, **n. sp.**, Lower Ludlow limestone, England, and forming *Myriastichidae*, **n. fam.**; SOLLAS (216) pp. 700, 701 and fig. 5.

†*Nucleolites luynesi*; FOURTAU (96) p. 627.

†*Offaster globulosus*; BONARELLI (42) p. 1020.

†*Oligoporus*:—*O.* ? *minutus*, **n. sp.**, Deer Creek limestone, Coal measures, N.E. of Topeka, Kansas; BEEDE (30) Kansas quart. viii, p. 126. *O. missouriensis*, variations in interambulacra; JACKSON (127) p. 131.

†*Opissaster thebensis*; FOURTAU (96) p. 676.
†*Orthopsis*:—*O. miliaris*; FOURTAU (98) p. 194. *O. rupellii* de Lor., believed to be Cretaceous of Sinai, probably Cenomanian, and not Nummulitic of Mokattam; FOURTAU (96) p. 619.
†*Palaeodiscus ferox*, jaws and ambulacra described and figd.: SOLLAS (216) p. 701.
†*Palaeostoma zitteli*; FOURTAU (96) p. 665.
†*Paropsonema*, nom. nud.; CLARKE (60).
†*Pedina sinaica* Desor, doubtful if from Cretaceous of Sinai; FOURTAU (96) p. 619.
Periaster, vide etiam sub *Hemiaster*. †*P. elatus*; FOURTAU (96) p. 631.
†*Pericosmus*:—*P. aequalis*; AIRAGHI (4) p. 173. *P. lyonsi*, **n. sp.**, "Helvétien II, Couches à Pecten Malvinae." Gebel Geneffé, G. Aouebet, G. Damasq, Egypt; GAUTHIER in FOURTAU (96) p. 716, pl. iv. *P. marianii*, n. n.; AIRAGHI (3) p. 251: **n. sp.**, Aquitanian of R. Ravanasco in Bormida basin; AIRAGHI (4) Boll. Soc. geol. Ital. xviii, p. 175, pl. vii. *P. paronai*, n. n.; AIRAGHI (3) p. 250: **n. sp.**, Tongrian of Cassinelle in Bormida basin, based on *P. edwardsi* var. *minor* Botto-Micca; AIRAGHI (4) Boll. Soc. geol. Ital. xviii, p. 174, pl. vi. *P. pasqualii*, **n. sp.**, Lutetian II, Mokattam, allied to *P. spatangoides*, type in Pasquali coll.; GAUTHIER in FOURTAU (96) p. 672, pl. ii. *P. peroni*, measurements (p. 174); *P. spatangoides* (p. 173, pl. vii): AIRAGHI (4).
Phormosoma hoplacantha, evidence for bipolarity; THOMPSON (230) p. 319.
Phyllacanthus annulifera, Zoanthid incrusting spines (p. 134); *P. gigantea*, (p. 135); *P. imperialis* (p. 135): BELL (32).
Phymosoma d'Arch. & Haime non Quatrefrages. †*P. radiatum*; ŽELÍZKO (260) pp. 534, 541.
†*Plagiopygus*, vide sub *Gisopygus*.
Plesianthus, vide *Clypeaster taramellii*.
†*Plesiaster*:—*P. bucardium* Goldf. (sub *Spatangus*), redescr. fr. holotype and topotypes (p. 119, pl. ix); *P.? parvistella*, **n. sp.**, "Hornstein des Aachener Waldes," separated from *P. bucardium* (p. 121, pl. ix): SCHLUETER (209).
†*Plesiospatangus* Pomel, accepted as genus and redefined; GAUTHIER in FOURTAU (96) p. 678; LAMBERT in Review suggests union with *Brissospatangus* Cott. 1863. *P. cotteaui*; FOURTAU (96) p. 687: apical system; GAUTHIER (102) p. 344, text-fig. 1.
†*Pliolampas*, descended from *Echinanthus* and are Miocene; GAUTHIER in FOURTAU (96) p. 653. *P. pioti*, **n. sp.**, "Helvétien II, couches au-dessous du niveau des Heterostegina" Gebel Geneffé and Gebel Aouebet, Egypt; GAUTHIER in FOURTAU (96) p. 712, pl. iii.
†*Porocidaris schmideli*; FOURTAU (98) p. 197: Egyptian localities, those of Mayer-Eymar corrected; FOURTAU (96) p. 638.
Pourtalesia phiale, evidence for bipolarity; THOMPSON (230) p. 318.
†*Prenaster* (!) *carinatus*, **n. sp.**, Senonian, Daghestan; ANTHULA (18) p. 65, pl. ii.
†*Protocidaris*, **n. g.** of *Archaeocidaridæ*, compared with *Archaeocidaris*, *Eocidaris*, and *Lepidocidaris* (p. 202): with genotype *P. acuaria* Whidb. (sub *Eocidaris*?), Pilton beds, E. of Barnstaple, type in Mus. Pract. Geol., compared with *Cidaris laevispina* Sandberger (p. 203, pl. xxv); WHIDBORNE (250). *P.* sp. [Ludlow beds?], Leintwardine, possibly this genus is a large *Echinocystis*; SOLLAS (216) p. 709.
†*Psammechinus*:—*P. affinis* var. *depressa* (p. 693); *P. dubius*, cited by Rothpletz from Ouady Etal, Sinai, where however no Miocene exists (p. 694); *P. monilis*, apparently an *Arbacina* (p. 694): FOURTAU (96). *P. woodsi*; HALL & PRITCHARD (117) p. 48.

†*Pseudocidaris pasqualii*, **n. sp.**, Upper Cenomanian drift near Cairo, type in Pasquali coll., possibly belongs to *P. dieneri* de Loriol, and resembles *Radiolus glandarius clavophoenix* Quenst.; GAUTHIER in FOURTAU (96) p. 613, pl. i. LAMBERT in Review considers it inseparable from *Cidaris claviphoenix* Quenst.

†*Pseudodiadema* :—*P.* sp. Zittel, Cenomanian, Egypt; FOURTAU (96) (p. 616). *P. meunieri*, **n. sp.**, "Cenomanien, Calcaires gréseux à *Sphaerulites Schweinfurthi* Zitt. Ouady Mohr," Egypt; GAUTHIER in FOURTAU (96) p. 617, pl. i.

†*Pygorhynchus* :—*P. abundans* Mayer-Eymar [nom. nud. on p. 43 of (224) Zool. Rec. 1897] descr. and referred to n. g. *Bothriolampas*; GAUTHIER in FOURTAU (96) p. 655. *P. grandiflorus*; FOURTAU (96) p. 651.

†*Pygurus* :—*P. noetlingi*, **n. sp.**, Cenomanian (?) of Keft-Akab, Ouadi Sanin, Lebanon; LORIOL (154) p. 4, pl. i. *P. nummuliticus* Mayer-Eymar is a fragment of an *Euspatangus*; FOURTAU (96) p. 652.

†*Pyrina desmoulinsii*; ANTHULA (18) p. 59.

†*Rhabdocidaris* :—*R. censoriensis*, spines; VALETTE (237) p. 137. *R. crameri*, Senonian near Ghizeh, probably incl. the '*Cidaris* cf. *cyathifera*' and the '*C. subvesicularis*' of J. Walther, 1888; FOURTAU (96) p. 615. *R. itala*; FOURTAU (96) p. 633 and (98) p. 197. *R. lorioli* "Mayer-Eymar (in collect.)" presumably **n. sp.**, Middle Suessonian of Dounkoun and Kourkour, Egypt, based on spines only; FOURTAU (96) p. 636, pl. i. *R. megalacantha*, is this rightly recorded from Rauracian of l'Yonne?; VALETTE (237) p. 134. *R. minichensis*, quoted as "Mayer Eymar, 1897" but this appears to be only MS label, so that it is **n. sp.**, Lutetian I b, Minieh, Egypt, allied to *R. zitteli* and *R. pouechi*; GAUTHIER in FOURTAU (96) p. 634, pl. i. *R. nobilis*, spine from Rauracian of Mailly-le-Chateau, l'Yonne, descr. and compared with *R. orbignyana* (p. 135, pl. i); *R. orbignyana*, spines (p. 137): VALETTE (237). *R. pouyannei*; ROLLAND (199) p. 55, pl. xxvii, p. 78. *R. ritteri*, spines; VALETTE (237) p. 138. *R. solitaria* "Mayer-Eymar, 1898," no reference, therefore presumably **n. sp.**, Lutetian I, Mokattam, approaches *Cidaris taramelli*, type a single spine at Zurich, not figd. (p. 637); *R. zitteli*, redefined (p. 635): FOURTAU (96).

†*Salenia batnensis*, Cenomanian, Egypt; FOURTAU (96) p. 616.

Salmacis? elegans, **n. sp.**, New Britain, "though at first sight it appears to be a Cidaroid, it is certainly a Triplechinid"; BELL (32) p. 135, pl. xvii.

†*Scagliaster* :—*S.* sp.; BONARELLI (42) p. 1022, pl.-f. 6: is a true *Stegaster*, but sp. nondescr.; LAMBERT in Review. *S italicus*; BONARELLI (42) p. 1022, pl.-f. 1: probably = the *Stegaster* cf. *subtrigonatus* of Bonarelli, and is a *Cardiaster*; LAMBERT in Review.

Schizaster :—†*S.* sp.?, Miocene of Gebel Geneffé, Egypt; FOURTAU (96) p. 717. †*S.* sp. ind.; AIRAGHI (4) p. 172. †*S. acuminatus*; BÖCKH (40) p. 13, pl. ii. †*S. africanus*; FOURTAU (96) p. 674. †*S. ambulacrum*, measurements (p. 166); †*S. corsicus*, smaller than topotypes (p. 171); †*S. desori*, affinities with *S. laubei* and *S. parkinsoni* (p. 170): AIRAGHI (4). †*S. foveatus*; FOURTAU (96) p. 675. *S. fragilis*; BIDENKAP (38) p. 112. †*S. gaudryi*; FOURTAU (96) p. 674. †*S. globulosus*, **n. s.**, Pliocene of S. Colombano in Lombardy; AIRAGHI (2) p. 375, pl.-f. 9. †*S. indigenus* Mayer-Eymar, apparently accepted (p. 690); †*S. jordani* (p. 676): FOURTAU (96). †*S. le contei*, **n. sp.**, Martinez beds, Contra Costa co., Cal.; MERRIAM (175) p. 164, pl. xxi. †*S. major* (p. 372); †*S. mariani*, **n. sp.**, Pliocene of S. Colombano in Lombardy (p. 374, pl.-f. 8): AIRAGHI (2). †*S. mokattamensis*; FOURTAU (96) p. 675, and (98) p. 197. †*S. mongei* Mayer-Eymar, apparently accepted; FOURTAU (96) p. 960. †*S. rana*, **n. sp.**, Castel-

vecchio vicentino; MAZZETTI (173) Mem. Pont. Acc. Lincei, v, p. 10, pl. i. †*S. recticanalis*, **n. sp.**, Tertiary, bank of Saigawa at Kanazawa in Kaga, Japan; YOSHIWARA (259) J. Geol. Soc. Tokyo, vi, p. 3. †*S. rimosus*, slight variations from forms previously descr.; AIRAGHI (4) p. 170. †*S. roemeri* is probably a *Hypsaster*; LAMBERT in Review of FRIC (91) Zool. Rec. 1897. †*S. rohlfsi*; FOURTAU (96) p. 675. †*S. scillae*; AIRAGHI (2) p. 372: incl. *S. bellardii* Michelotti; AIRAGHI (4) p. 172. †*S. studeri*, redescr., measurements, incl. specimens referred by Botto-Micca to *S. diulfensis*?; AIRAGHI (4) p. 167, pl. vii: probably not *S. studeri*; LAMBERT in Review. †*S. vicinalis*, measurements; AIRAGHI (4) p. 169. †*S. zitteli*; FOURTAU (96) p. 674.

†*Scutella*:—*S. ammonis*; FOURTAU (96) p. 698. *S. faujasi*, with 4 ambulacra; KERFORNE (134). *S. gabbi* Rémond as *Clypeaster*, redescr.; MERRIAM (175) p. 168, pl. xxii. *S. gibbsi*, see *Echinarachnius*. *S. innesi*, **n. sp.**, Helvetian II "Grès à *Echinolampas amplus* et *Ostrea vestita*," between Gebel Geneffé and railway station; GAUTHIER in FOURTAU (96) p. 699, text-fig. *S. interlineata*, redescr.; MERRIAM (175) p. 168, pl. xxii. *S. rostrata*; FOURTAU (96) p. 698. *S. striatula*, differences from *S. subrotunda*, to which the specimens were referred by Michelotti; AIRAGHI (4) p. 154, pl. vi: certainly not *S. striatula*; LAMBERT in Review. *S. subrotunda*; AIRAGHI (4) p. 154. *S. zitteli*, FOURTAU (96) p. 699.

†*Scutellina patella*; HALL & PRITCHARD (117) pp. 39, 45, 49.

Semiclypeus, vide sub *Amblypygus*.

Sismondaea versus *Sismondia*, spelling discussed; FOURTAU (96) p. 644.

†*Sismondia*:—*S. logotheti* (p. 642); *S. macrophylla* Mayer-Eymar (as *Sismondaea* [vide Zool. Rec. 1898]) "bien aventureux d'établir une n. sp. de *Sismondia* sur un seul exemplaire de petite taille" (p. 644); *S. planulata* cited by Fraas from Mokattam may be *S. saemanni* (p. 643); *S. zitteli* Mayer-Eymar (as *Sismondaea* [vide Zool. Rec. 1898]) accepted (p. 644): FOURTAU (96).

Spatangus arcuarius Goldf. 1826, examination of the original specimen, which is not a fossil, but referable to the recent *Amphidetus cordatus* Penn. sp.; SCHLUETER (209) p. 104. †*S. bucardium* Goldf., vide *Plesiaster bucardium* et *parvistella*. †*S. corsicus*; AIRAGHI (4) p. 177. †*S. hieroglyphicus* Jos. Müller, distinguished from *Plesiaster bucardium* et *parvistella*; SCHLUETER (209) p. 122. †*S. pantanellii*, **n. sp.**, Bartonian of Poleo near Schio; MAZZETTI (172) Mem. Pont. Acc. Lincei, v, p. 8, pl. i. *S. purpureus*, distribution, habitat, habits, commensal; ALLEN (8) p. 475: Müll. non Lam., Veronese; †MAZZETTI (173) p. 14. †*S. truncatus* Goldf., vide *Cardiaster*.

Sphaerechinus; UEXKÜLL (235). *S. granularis*, pedicellariæ; UEXKÜLL (234): breeding period, habitat; LO BIANCO (147) p. 474: crossed with *Strongylocentrotus*; VERNON (240): astrosphere in immature ova; STRICHT (225 A).

†*Stegaster*:—vide etiam sub *Scagliaster*. *S. caucasicus*, descr. and measured; ANTHULA (18) p. 63, pl. ii. *S.* cf. *planus*; BONARELLI (42) p. 1022, pl.-f. 5: is not a *Stegaster*; LAMBERT in Review. *S. subtrigonatus* and var.; BONARELLI (42) p. 1021, pl.-ff. 2, 3, 4: cannot be a *Stegaster* in sense of Seunes, or even of Pomel, but probably a *Cardiaster*; LAMBERT in Review.

†*Stenonia tuberculata*; BONARELLI (42) p. 1020; SIMIONESCU (215) p. 231.

†*Stirechinus* sp.; AIRAGHI (2) p. 365, pl. - f. 5.

†*Stomoporus*, vide sub *Megapneustes*.

Strongylocentrotus droebachiensis; BIDENKAP (37) p. 100, and (38) p. 111: development of interambulacrals; JACKSON (127) p. 129, figg. 112–116. †*S. draebachiensis* [sic]; AIRAGHI (2) p. 365, pl.-f. 6: pores are different, LAMBERT in Review. *S. lividus*, dissection, very popular;

GRUVEL (113): breeding period, habitat; LO BIANCO (147) p. 474: effect of staleness of gonads; VERNON (240): death-temperature; VERNON (241): pedicellariæ; UEXKÜLL (234). *S. pallidus*; BIDENKAP (38) p. 112.

Temnopleurus, juv.; BELL (32) p. 135. *T. toreumaticus* (apud de Loriol) or *japonicus* (apud v. Martens), at Delagoa; JUNOD & GODET (131) p. 281.

†*Thagastea luciani* de Lor. as *Echinocyamus*, but has no internal septa; FOURTAU (96) p. 642.

†*Tornquistellus* **nom. nov.** pro *Leptechinus* Tornquist non Gauthier; BERG (36) Comun. Mus. Buenos Aires, i, p. 77.

†*Toxaster*:—*T. collegnii*; ANTHULA (18) p. 65. *T. complanatus*; ANTHULA (18) p. 65; MAAS (163) p. 249: see *Echinospatangus cordiformis*; LAMPLUGH (144). *T. gibbus*; ANTHULA (18) p. 65.

†*Toxobrissus lorioli* Bittner, vide sub *Brissopsis*.

†*Toxopatagus*, vide sub *Hemipneustes italicus*.

Toxopneustes variegatus; CLARK (56) p. 132.

(D.)—ASTEROIDEA.

Classification of *Ast.* based on Sladen, with emendations of detail based on E. Perrier; HAMANN (118) pp. 666–719. General revision of Palæozoic *Ast.*, and distribution between *Phanerozonia* and *Cryptozonia*; GREGORY (111).

Achanthaster echinites; BELL (32) p. 138.

Acodontaster, **n. g.** with genotype *Gnathaster elongatus* Slad., and incl. *G. miliaris* Gray; VERRILL (243) p. 204.

Antheniaster, **n. g.** with genotype *Anthenoides sarissa* Alcock; VERRILL (243) p. 173.

Anthenoides sarissa, see *Antheniaster*.

Aphroditaster gracilis; VERRILL (243) p. 195.

Archaster bairdi, see *Mediaster*. *A. parelii*, see *Pseudarchaster intermedius* and *P. fallax*.

Archasteridae broken up into *Odontasteridae*, *Plutonasteridae*, *Goniopectinidae*, *Benthopectinidae* (all which are *Valvata*) and *Archasteridae* = *Archaster* (which are *Paxillosa*); VERRILL (243) p. 199.

†*Argaster*, maintained in *Palaeasterinae*, with genotype *Asterias antiqua* Troost; GREGORY (111) p. 345.

†*Aspidosoma*, maintained, with genotype *A. arnoldi*; GREGORY (111) p. 351.

†*Aspidosomatidae*, diagnosed, as fam. of *Phanerozonia*; GREGORY (111) p. 351.

Asteracanthion rubens, dissection, very popular; GRUVEL (113).

Asterias sp. cf. *muelleri*, in Tromsö Sound, perhaps young of some Arctic form, measurements and preliminary description; BIDENKAP (38) p. 108. †*A. antiqua* Hisinger 1837 non Troost 1835, see *Lindstromaster*. †*A. antiqua* Troost 1835 non Hisinger 1837, see *Argaster*. *A. forbesi*, popular account, economics, and development; FIELD (86): life-history and bionomics, with special reference to protection of oysters; MEAD (174): effect of salt-solutions on ova; MORGAN (178) p. 499. *A. glacialis*; BIDENKAP (37) p. 99, and (38) p. 108: breeding period; AURIVILLIUS (21) p. 12: breeding period, habitat; LO BIANCO (147) p. 470: distribution, habitat, habits, food; ALLEN (8) p. 466: pedicellariæ; UEXKÜLL (234) p. 354. *A. muelleri*; BIDENKAP (37) p. 99, and (38) p. 108. *A. pallida*, Goto's account of development criticised; MACBRIDE (164). *A. rubens*; HAECKEL (115) pl. xl; BIDENKAP (37) p. 99, and (38) p. 108: breeding period; AURIVILLIUS (21) p. 11: distribution, habitat, habits, food; ALLEN (8) p. 465:

migrates from deep to shallow water at breeding period; SEMON (213) p. 507. *A. stellionura*, with *r* 14 mm. and *R* 120 mm., in Lyngenfjord; BIDENKAP (37) p. 99. *A. tenuispina*; CLARK (56) p. 130: breeding period, fissiparity, habitat; LO BIANCO (147) p. 470. *A. vulgaris*, bionomics etc. as under *A. forbesi*; MEAD (174).

Asterina cepheus, colour in life; LUDWIG (158) p. 541. *A. exigua*; BELL (32) p. 137. *A. folium*; CLARK (56) p. 130. *A. gibbosa*; CONDORELLI (61) p. 34: breeding period, and var. *pancerii*, breeding period, habitat; LO BIANCO (147) p. 470.

Asterodon; VERRILL (243) p. 203.

Asteropsis pulvillus, breeding period; AURIVILLIUS (21) p. 12.

Astrogonium M. & Tr. is a name of no validity; VERRILL (243) pp. 147, 149. *A. annectens*, *A. aphrodite*, *A. hystrix*, *A. necator*: vide sub *Pseudarchaster*.

Astropecten andromeda in Tromsö Sound, measurements; BIDENKAP (38) p. 107. *A. aurantiacus*, breeding period, habitat, food (p. 470); *A. bispinosus*, breeding period, habitat, food (p. 471): LO BIANCO (147). *A. inermis*, **n. sp.**, Madagascar, allied to *A. granulatus* and *A. cingulatus*; LORIOL (154) p. 14, pl. ii. *A. irregularis*, distribution, habitat, habits, food, commensal; ALLEN (8) p. 461. *A. kagoshimensis*, **n. sp.**, Kagoshima, Japan, compared with *A. javanicus*, *A. orsinii*, *A. tamilicus* and *A. scoparius* (p. 25, pl. ii); *A. koehleri*, **n. sp.**, Pondicherry, somewhat allied to *A. andersoni*, *A. scoparius*, *A. indicus* and *A. tamilicus* (p. 19, pl. i); *A. ludwigi*, **n. sp.**, Tago, Japan = specimen figd. by J. E. Ives [not Yves] 1891, 1892, as *A. japonicus*, compared with the true *A. japonicus* and *A. pontoporaeus* (p. 21, pl. ii): LORIOL (154). *A. monacanthus*; BELL (32) p. 136. *A. penangensis*, **n. sp.**, Penang, Malacca Peninsula, allied to *A. andersoni*, and compared with *A. capensis*, *A. javanicus* and *A. scoparius*; LORIOL (154) p. 7, pl. i. *A. pentacanthus*, breeding period, habitat, food; LO BIANCO (147) p. 471. *A. rubidus*, **n. sp.**, Mexico, allied to *A. articulatus* Say (sensu Lütken & Ives [not Yves]), and compared with *A. variabilis* (p. 16, pl. ii); *A. verrili* [sic], **n. sp.**, Mazatlan, allied to *A. indicus* and *A. fragilis*, and compared with *A. monacanthus* (p. 12, pl. ii); *A. zebra*, small specimens from Sumatra, fully descr. and compared with adult, the sp. incl. *A. coppingeri* (p. 9): LORIOL (154).

Benthopecten spinosus, incl. *Pararchaster semisquamatus* var. *occidentalis* Slad. and *P. armatus* Slad.; VERRILL (243) p. 217, pl. xxx.

Benthopectinidae, **n. fam.** = *Benthopectininae* Verrill 1894; VERRILL (243) p. 200.

Bipinnaria asterigera (larva of *Luidia sarsi*); NORDGAARD (182) p. 14: coast of Norway, February to October; NORDGAARD (181) p. 20.

Blakiaster conicus, notes, pedicellariæ; VERRILL (243) p. 218, pl. xxvii.

Culliaster Gray 1840, maintained with genotype *C. childreni*; VERRILL (243) p. 149.

Ceramaster s.-g. of *Tosia* (q.v.); VERRILL (243) p. 161.

Chaetaster longipes, breeding period, habitat; LO BIANCO (147) p. 471.

Cladaster, **n. g.**, with genotype *C. rudis*, **n. sp.**, 440 fms., off Florida; VERRILL (243) p. 175, pl. xxviii.

Craspedaster, perhaps belongs to *Goniopectinidae*; VERRILL (243) p. 201.

Cryptozonia, extended to Palaeozoic *Ast.*; GREGORY (111) p. 343.

Ctenodiscus crispatus; BIDENKAP (37) p. 100, and (38) p. 109. *C. krausei* is probably syn. of *C. corniculatus*; DOEDERLEIN (78) p. 337.

Culcita sp., plates of dorsal surface imbricate, enlarged oral and aboral views; BELL (32) p. 137. *C. schmideliana* var. *africana*; LUDWIG (158) p. 538.

†*Dermaster*, **n. g.**, erected for *D. boehmi*, **n. sp.**, Vögisheim near Mullheim

in Baden, Bathonian "Ferrugineus-Schichten," ventral surface unknown; LORIOL (155).

Dorigona Gray 1866 is syn. of *Ogmaster* Martens, but *Dorigona* Perrier 1894 is syn. of *Nymphaster* Sladen; VERRILL (243) p. 185.

Dytaster exilis, evidence for bipolarity; THOMPSON (230) p. 320.

Echinaster eridanella; BELL (32) p. 138. *E. purpureus*; l. c.: Zanzibar; LUDWIG (158) p. 543. *E. sepositus*, breeding period; LO BIANCO (147) p. 741.

†*Encrinasteriae*, rejected; GREGORY (111) p. 342.

†*Etheridgaster*, **n. g.** of *Lepidasteridae* with genotype *Palaeaster clarkei* De Kon.; GREGORY (111) p. 353.

Euasteroidea, rejected; GREGORY (111) p. 342.

Eugoniaster, **n. g.**, with genotype *Pentagonaster investigatoris* Alcock; VERRILL (243) p. 172.

Fromia milleporella; BELL (32) p. 138.

Gnathaster, restr. with genotype *G. meridionalis*, and incl. *G. pilulatus*; VERRILL (243) pp. 203, 204. *G. elongatus* and *G. miliaris*, vide *Acodontaster*.

Gnathasterinae, vide *Odontasteridae*; VERRILL (243) p. 203.

Gnathodon, errore pro *Gnathaster*; VERRILL (243) p. 203.

Goniaster Perrier et Sladen, non Agassiz nec Gray, vide *Pseudoreaster*. History of the name (p. 147), retained sensu Gray, with genotype *G. cuspidatus*, and with *Phaneraster* Perrier as syn. (p. 150); VERRILL (243). †*G.* sp., probably = *Astropecten spongiarum* Eug. Deslongchamps, Bradfordian, Lion-sur-mer; BIGOT (39). *G. africanus*, maintained (p. 156); *G. americanus*, pedicellariæ and spines of holotype descr., variations fr. type in Florida and W. Indian specimens, incl. *Pentagonaster parvus* Perrier as young, also *P. semilunatus* Perr. pars (p. 151, pl. xxiv *a*, xxvi); *G. lamarcki*, maintained (p. 157): VERRILL (243).

Goniasteridae, revised; VERRILL (243) p. 145.

Goniasterinae, **n. subfam.** of *Goniasteridae*, = *Pentagonasterinae* Slad. pars; VERRILL (243) p. 200.

Goniodiscus M. & Tr., retained sensu Perrier, with genotype *G. cuspidatus* (Lam.) (p. 149); *G. pedicellaris* Perrier referred with doubt to *Mediaster* (p. 182): VERRILL (243).

Goniodon; VERRILL (243) p. 203.

Goniopecten demonstrans, sole representative of genus, redescribed; VERRILL (243) p. 213, pl. xxvii.

Goniopectinidae, **n. fam.** for *Goniopecten* restr., *Prionaster*, n. g. and ? *Craspedaster*; VERRILL (243) pp. 200, 213.

Gymnasterias carinifera; BELL (32) p. 137.

Hacelia attenuata, breeding period, habitat; LO BIANCO (147) p. 471.

Henricia sanguinolenta; BIDENKAP (38) p. 108: one with *r* 18·5 mm. and *R* 59 mm.; BIDENKAP (37) p. 99: distribution, habitat, habits; ALLEN (8) p. 465.

Hexaster obscurus Perrier 1891 = *Pteraster* (*Temnaster*) *hexactis* Verrill 1894; VERRILL (243) p. 221.

Hippasteria Gray 1840, maintained with genotype *H. phrygiana* (p. 148); *H. caribaea*, **n. sp.**, 268 fms., 'Albatross' Station 2668, W. Indies (p. 174, pl. xxviii): VERRILL (243).

Hippasteriinae, **n. subfam.** of *Goniasteridae*; VERRILL (243) p. 174.

Hoplaster, relations uncertain (p. 197); *H. lepidus* (p. 198); *H. spinosus* (p. 197): VERRILL (243).

Hosia Gray 1840, had genotype *H. flavescens*, which is an *Anthenea*, while *H. spinulosa* is "probably an immature species of *Tosia*, or of some closely related genus"; VERRILL (243) p. 149.

Hymenaster echinulatus; HAECKEL (115) pl. xl. *H. regalis*, var *agassizi*, **n. var.**, 1242 fms., Martha's Vineyard; VERRILL (243) p. 221.

Isaster bairdi, vide *Mediaster*.
Lasiaster, relations uncertain ; *L. hispidus* ; VERRILL (243) p. 198.
†*Lepidaster*, maintained, with genotype *L. grayi* ; GREGORY (111) p. 353.
†*Lepidasteridae*, diagnosed as fam. of *Cryptozonia* ; GREGORY (111) p. 352.
Linckia ehrenbergii, 6-rayed, comet-form, all specimens with 2 madreporites in adjoining interradii, from Zanzibar, colour in life ; LUDWIG (158) p. 542. *L. guildingii* ; CLARK (56) p. 130. *L. multiforis* ; BELL (32) p. 138. *L. multifora*, colour in life ; LUDWIG (158) p. 542.
†*Lindstromaster*, **n. g.** (p. 346) with genotype *Asterias antiqua* (Hisinger) ; GREGORY (111) p. 347, pl. xvi.
†*Lindstromasterinae*, **n. subfam.** of *Palaeasteridae* ; GREGORY (111) p. 346.
Litonotaster, **n. g.**, with genotype *Pentagonaster intermedius* Perr. ; VERRILL (243) p. 171, pl. xxviii.
Luidia ciliaris, breeding period, habitat, commensals ; LO BIANCO (147) p. 471. *L. clathrata*, Bermuda, colour ; CLARK (56) pp. 118, 130. *L. sarsi*, distribution, habitat, food ; ALLEN (8) p. 463 : breeding period, habitat ; LO BIANCO (147) p. 471 : vide etiam *Bipinnaria*.
Luidiidae, **n. fam.** = *Luidiinae* Slad. ; VERRILL (243) p. 201.
Marginaster austerus, **n. sp.**, W. Indies ; VERRILL (243) p. 221.
Mediaster, redefined (p. 178) ; *M. aequalis*, redescribed (p. 179, pl. xxiv) ; *M. agassizi*, n. sp., W. Indies (p. 181) ; *M. arcuatus* (p. 183) ; *M. bairdii* (p. 181, pls. xxiv, xxvi) ; *M. japonicus* (p. 183) ; *M. patagonicus* (p. 184) ; *M.* (?) *pedicellaris*, notes on a cotype (p. 182) ; *M. roseus* Alcock 1898, is probably *Pseudarchaster* (p. 184) : VERRILL (243).
Mediasterinae, **n. subfam.** of *Goniasteridae* ; VERRILL (243) p. 177.
†*Medusaster parvus*, **n. sp.**, Pilton beds, N.E. of Harford Landkey, N. Devon ; WHIDBORNE (250) p. 205, pl. xxxvii.
Mithrodia clavigera ; BELL (32) p. 138 : Zanzibar ; LUDWIG (158) p. 543.
†*Monaster*, restr. with genotype *M. giganteus* and made genus of *Palaeasterinae*, incl. also *M. stutchburyi* ; GREGORY (111) p. 345.
Nanaster, syn. of *Stephanasterias* (q.v.) ; VERRILL (243) p. 222.
Nardoa gomophia ?juv., Funafuti, 130 fms. ; HEDLEY (118 A) p. 530. *N. tuberculata* ; BELL (82) p. 138.
Nereidaster, **n. g.** vel s.-g., genotype *Nymphaster symbolicus* Slad., and incl. *N. bipunctus* Slad. ; VERRILL (243) p. 186.
Nymphaster, redefined (p. 184) ; *N. albidus* (p. 186) ; *N. arenatus* (p. 186) ; *N. basilicus* (p. 186) : VERRILL (243). *N. bipunctus*, see *Nereidaster*. *N. jacqueti* (Perr.) syn. of *N. prehensilis* (Perr.) (p. 186) ; *N. protentus* (p. 186) ; *N. subspinosus* (p. 185) : VERRILL (243). *N. symbolicus*, see *Nereidaster*. *N. ternalis* ; VERRILL (243) p. 185, pl. xxvi.
Odontaster, redefined (p. 205) ; *O. hispidus*, redescr. and restr. (p. 206, pl. xxix) ; *O. robustus*, **n. sp.**, 368 fms., Martha's Vineyard (p. 209, pl. xxix) ; *O. setosus*, **n. sp.**, 56–400 fms., Martha's Vineyard (p. 207, pl. xxix) : VERRILL (243).
Odontasteridae, **n. fam.** = *Gnathasterinae* Perr. – *Hoplaster* ; VERRILL (243) p. 201.
Ophidiaster pustulatus, incl. *O. purpureus* Perr., fr. Aldabra Id., measurements, few pedicellariæ ; LUDWIG (158) p. 541.
†*Palaeaster*, restr. with genotype *P. niagarensis* Hall ; *P. caractaci*, **n. sp.**, ex Salter MS., Caradoc Sandstone, ?Soudley Quarry, Church Stretton, Shropshire [Marshbrook, apud Salter] allied to *P. matutina* Hall : GREGORY (111) p. 344. *P. clarkei*, genotype of *Etheridgaster* (q.v.). *P. longimanus*, Pilton beds, N. Devon, now first descr. and figd. ; WHIDBORNE (250) p. 204, pls. xxvi & xxix.
†*Palaeasteridae* diagnosed, as fam. of *Phanerozonia* ; GREGORY (111) p. 344.
†*Palasterina*, spelling altered by GREGORY (111) to *Palaeasterina* (q.v.) : vide etiam sub *Sturtzaster*.
†*Palaeasterina*, rediagnosed, with genotype *P. primaeva* (Forbes) ; GREGORY

(111) p. 349. *P. antiqua* (Hisinger), see *Lindstromaster*. *P. bonneyi*, **n. sp.**, Ludlow shales, Leintwardine, Shropshire; GREGORY (111) p. 349, pl. xvi and text-figg. *P. kinahani* Baily, see *Uranaster*. *P. stellata* Billings, see *Schuchertia*.

†*Palaeasterinae*, diagnosed as sub-fam. of *Palaeasteridae*; GREGORY (111) p. 344.

†*Palaeasterinidae*, diagnosed as fam. of *Phanerozonia*; GREGORY (111) p. 348.

†*Palaeasteroidea*, rejected; GREGORY (111) p. 342.

Palaeocoma Salter, vide *Sturtzaster*.

†*Palaeostella*, maintained, with genotype *P. solida*, and referred to *Aspidosomatidae*; GREGORY (111) p. 351.

Palmipes membranaceus, breeding period, habitat; LO BIANCO (147) p. 473. *P. placenta*, distribution, habitat; ALLEN (8) p. 464.

Paragonaster cylindratus; *P. elongatus*; *P. strictus*; *P. subtilis* compared with *P. formosus*: VERRILL (243) p. 196.

Pararchaster armatus, et *P. semisquamatus* var. *occidentalis*, vide *Benthopecten spinosus*.

Paxillosa, discussed and restr. to include *Porcellanasteridae*, *Archasteridae*, *Astropectinidae*, *Luidiidae*; VERRILL (243) p. 198.

Peltaster, **n. g.**, with genotype *P. hebes*, **n. sp.**, 294 fms. 'Albatross' station 2668, W. Indies (p. 168, pl. xxviii); *P. planus*, redescribed (p. 170, pl. xxviii): VERRILL (243).

Pentaceropsis obtusata; BELL (32) p. 136.

Pentaceros lincki and *P. nodosus*, Id. of Matupi, either varr. of one sp., or interbreed and produce hybrids; BELL (32) p. 136. *P. muricatus*; LUDWIG (158) p. 540.

Pentagonaster dates from Gray 1840, with genotype *P. pulchellus*, and incl. *P. abnormale*, *P. bourgeti*, *P. gunni*, and *P. lubeni*, while *Stephanaster* Ayres is syn.; VERRILL (243) pp. 147, 157, 158. *P. affinis*, vide *Pyrenaster*. *P. arcuatus*, vide *Mediaster*. *P. dentatus*, vide *Pyrenaster*. *P. granularis*, vide *Tosia*. *P. intermedius*, vide *Litonotaster*. *P. investigatoris*, vide *Eugoniaster*. *P. japonicus*, vide *Mediaster*. *P. lepidus*, vide *Hoplaster*. *P. patagonicus*, vide *Mediaster*. *P. planus*, vide *Peltaster*.

†*Petraster*, maintained, in *Palaeasterinae*, with genotype *P. rigidus*; GREGORY (111) p. 345.

Phanerozonia, extended to Palæozoic *Ast.*; GREGORY (111) p. 343: restr. by excl. *Asterinidae* and *Gymnasteridae* [what happens to these is not stated]; VERRILL (243) p. 200.

Plinthaster s.-g. of *Tosia* (q.v.); VERRILL (243) p. 161.

Plutonasteridae, **n. fam.** with sub-famm. *Mimasterinae*, *Plutonasterinae*, and *Pontasterinae*; VERRILL (243) pp. 200, 210.

Plutonaster agassizii, pedicillariæ (p. 211, pl. xxvii); *P. efflorescens*, description of holotype, which is "evidently the young of some large species" (p. 211): VERRILL (243). *P. subinermis*, breeding period, habitat; LO BIANCO (147) p. 473.

Pontaster forcipatus, evidence for bipolarity; THOMPSON (230) p. 319.

Porania pulvillus, distrib., habitat, habits; ALLEN (8) p. 463.

Prionaster, **n. g.**, with genotype *P. elegans*, **n. sp.**, 142 fms. 'Albatross' station 2401, G. of Mexico; VERRILL (243) p. 215, pl. xxvii.

†*Protaster* sp., Devonian, Belgium; DESTINEZ (71).

†*Protasterocanthion*, maintained as genus of *Taeniasteridae*, with genotype *P. primus*; GREGORY (111) p. 352.

Pseudarchaster, redefined (p. 189); *P. annectens* (p. 195); *P. aphrodite* (p. 195); *P. concinnus*, spines and genital pores discussed (p. 193, pl. xxx); *P. discus* (p. 195); *P. fallax*, incl. *Archaster parelii* pars (p. 190, pl. xxx); *P. granuliferus*, **n. sp.**, 'Albatross' station 2751

(p. 192, pl. xxx); *P.* (!) *hispidus*, **n. sp.**, 600 fms., W. Indies, based on immature specimens (p. 191, pl. xxx); *P. hystrix* (p. 195); *P. intermedius*, incl. *Archaster parelii* pars, var. *insignis* Verrill 1895, "probably only the fully adult" (p. 190, pl. xxx); *P. mosaicus* (p. 196); *P. necator* (p. 195); *P. ordinatus*, **n. sp.**, 324–335 fms., 'Albatross' stations 2376 and 2396, G. of Mexico (p. 194, pl. xxx); *P. patagonicus* (p. 195); *P. roseus* (p. 196); *P. tessellatus* (p. 195): VERRILL (243).

Pseudarchasterinae emended as sub-fam. of *Pentagonasteridae*; VERRILL (243) p. 187.

Pseudoreaster, **n. g.**, with genotype *P. obtusangulus* (Lam.) = *Goniaster* Perrier non Agassiz; VERRILL (243) p. 148 footnote.

Pteraster (*Temnaster*) *hexactis*, vide *Hexaster obscurus*: Spitzbergen, protection of brood; DOEDERLEIN (78) p. 338. *P. militaris*; BIDENKAP (37) p. 99, and (38) p. 107. *P. pulvillus*; BIDENKAP (38) p. 108. *P. stellifer*; HAECKEL (115) pl. xl.

Pyrenaster, **n. g.**, with genotype *Pentagonaster dentatus* Perrier (p. 166); *P. affinis*, perhaps var. of *P. dentatus* (p. 168); *P. dentatus*, variations from the type (p. 167, pl. xxvii): VERRILL (243).

Pythonasterinae ?, a young starfish possibly belonging to this sub-fam., from Lifu; BELL (32) p. 140, pl. xvii.

Retaster cribrosus; LUDWIG (158) p. 543.

Rosaster alexandri, discussed, very distinct from *Paragonaster*; VERRILL (243) p. 197.

†*Salteraster* Stürtz, said to be sym. of *Tetraster* Nich. and Eth.; ETHERIDGE (83): maintained as genus of *Taeniasteridae*, with genotype *Palaeaster asperrimus*; GREGORY (111) p. 352.

Scaphaster, **n. g.** (p. 27) with genotype *S. humberti*, **n. sp.**, Aripo, Ceylon, approaches *Asteropsis* of Fam. *Gymnasteridae*; LORIOL (154) p. 28 pl. iii.

†*Schoenaster* made a genus of *Palaeasterinidae*, with genotype *S. fimbriata*; GREGORY (111) p. 350.

†*Schuchertia*, **n. g.** of *Palaeasterinidae*, with genotype *Palaeasterina stellata*; GREGORY (111) p. 351.

Sideriaster, **n. g.** of *Astropectinidae*, with genotype *S. grandis*, **n. sp.**, 68 fms. 'Albatross' station 2378, G. of Mexico; VERRILL (243) p. 219, pl. xxx.

Solaster endeca; BIDENKAP (37) p. 99, and (38) p. 107. *S. papposus*, in Tromsö Sound, measnrements; BIDENKAP (38) p. 107: breeding period; AURIVILLIUS (21) p. 12: distribution, habitat, habits, food; ALLEN (8) p. 464: variations in dorsal skeleton; DOEDERLEIN (78) p. 338. *S. syrtensis*, Spitzbergen, distinguished from *S. endeca*; DOEDERLEIN (78) p. 339.

†*Stenaster*, doubtfully maintained as genus of *Taeniasteridae*, with genotype *S. salteri*; GREGORY (111) p. 352. *S. pulchellus* Bill., see *Urasterella*.

Stephanaster, vide sub *Pentagonaster*.

Stephanasterias, name maintained, genotype *S. albula* incl. *Asterias gracilis* Perrier, distribution; VERRILL (243) p. 222.

Stichaster roseus, breeding period; AURIVILLIUS (21) p. 12.

†*Sturtzaster*, **nom. nov.** pro *Palaeocoma* Salter 1857, non D'Orbigny 1850; *S.* ? *mitchelli*, **n. sp.**, Wenlock series at Bowning, N. S. W., possibly a *Palasterina*: ETHERIDGE (83).

†*Taeniaster*, maintained with genotype *T. spinosus* and excl. *T. cylindrus*; GREGORY (111) p. 351.

†*Taeniasteridae*, diagnosed as fam. of *Phanerozonia*,—but allied to *Cryptozonia*; l. c.

Temnaster hexactis, see *Hexaster obscurus*.

†*Tetraster* Nich. and Eth. anticipates *Salteraster* Stürtz; ETHERIDGE (83):

doubtfully maintained, in *Palaeasterinae*, with genotype *T. wyville-thomsoni*; GREGORY (111) p. 345.

Tosia Gray 1840, has genotype *T. australis*, and must be preferred to *Pentagonaster* Perrier and Sladen, but is perhaps not distinct from *Pentagonaster* Gray, rediagnosed, with key to spp. which are arranged under sections—A. Typical, B. *Plinthaster*, C. *Ceramaster* (p. 158); *T.* (*Plinthaster*) *comta*, **n. sp.**, 683 fms. 'Albatross' station 2117, W. Indies (p. 163, pl. xxvii); *T. granularis*, specimen from Halifax N. S. described (p. 162); *T.* (*Plinthaster*) *nitida*, **n. sp.**, 335 fms. 'Albatross' station 2396, W. Indies (p. 165, pl. xxvii): VERRILL (243).

†*Trichasteropsis*, maintained, with genotype *T. cilicia*, and referred to *Aspidosomatidae*; GREGORY (111) p. 351.

†*Tropidaster* possibly "a later representative of the *Lepidasteridae*"; GREGORY (111) p. 353.

†*Urana ter*, **n. g.** of *Lindstromasterinae*, with genotype *Palaeasterina kinahani* which is rediagnosed; GREGORY (111) p. 347.

†*Urasterella*, maintained as genus of *Taeniasteridae*, with genotype *Uraster ruthveni*, and incl. *Stenaster pulchellus*; GREGORY (111) p. 352.

Valvata, discussed and extended to include *Linckiidae*, *Pentacerotidae*, *Antheneidae*, *Goniasteridae*, *Odontasteridae*, *Plutonasteridae*, *Goniopectinidae*, *Benthopectinidae*; VERRILL (243) p. 198.

†*Xenaster*, maintained provisionally, with genotype *X. margaritatus*, which, however, "if Simonowitsch's figures are incorrect" "might take rank close to *Palæaster eucharis*," while *X. simplex* "ought no doubt to be made the type of a new genus," but "the value of [the only diagnostic] character is doubtful" and "if Simonowitsch's figures are incorrect" it "might enter *Palæaster*"; GREGORY (111) p. 346.

†*Xenasterinae*, **n. subfam.** of *Palaeasteridae*; GREGORY (111) p. 346.

(E.)—OPHIUROIDEA.

List of new genera and species published since Lyman's Challenger Report, 1882; LÜTKEN & MORTENSEN (162) pp. 206–208.

Amphilepis patens Lym., "rather important differences," from type in specimens fr. 10° 14′ N., 96° 28′ W., 2232 fms.; LÜTKEN & MORTENSEN (162) p. 161, pl. x.

Amphilimna, **n. g.** with genotype *Ophiocnida olivacea* Lym., perhaps incl. *A. caribaea* Ljung. as young; VERRILL (244) p. 30.

Amphiocnida, **n. s-g.** of *Amphiura*; VERRILL (244) p. 26.

Amphiodia, **n. g.** with genotype *A. pulchella* (Lym.); VERRILL (244) p. 24.

Amphioplus, **n. g.** with genotype *A. tumida* (Lym.); VERRILL (244) p. 25.

Amphipholis, diagnosed, with genotype *A. squamata* or *A. elegans*; VERRILL (244) p. 24: "much better defined" than *Ophiocnida*, but apparently not accepted; LÜTKEN & MORTENSEN (162) p. 156. *A. goesi*, redescr. (p. 28); *A. tenera* maintained and a neanic specimen described (p. 29): VERRILL (244).

Amphipsila, **n. g.**, with genotype *A. fulva* (Lym. as *Ophiopsila*) (pp. 55, 57); *A. maculata*, **n. sp.**, 200 fms., off Havana (p. 55, pl. iii); VERRILL (244).

Amphiura, restricted and diagnosed, with genotype *A. chiajei* and subgenera *Ophiopelte*, *Hemilepis*, *Amphiocnida*; VERRILL (244) p. 24. *A. sp.*, disc wanting, therefore not named (p. 158, pl. xiii); *A. assimilis*, **n. sp.**, 2° 35′ N., 86° 55′ W., 770 fms., one specimen with irregular mouth-shields, perhaps related to *A. chilensis* (p. 153, pl. x); *A. brevipes*, **n. sp.**, 1° 7′ N., 81° 4′ W., 1740 fms. (p. 149, pl. xi); *A. canescens* Lym., referred to *Ophiactis* (p. 143): LÜTKEN & MORTENSEN (162). *A. caulleryi* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 42, pl. vi. *A. chiajei*, breeding period; LO BIANCO (147) p. 496. *A.*

chilensis, colour in life, large individuals, and differences seen in neanic stage; LUDWIG (157) p. 12. *A. dalea*, specimens of this Atlantic sp. from E. Pacific, showing slight differences (p. 154, pl. xii); *A. diomedeae*, **n. sp.**, 7° 15′ N., 79° 36′ W., 1020 fms., and other stations of 'Albatross,' with some which are variations or young, sp. perhaps related to *A. chilensis* (p. 151, pl. xii): LÜTKEN & MORTENSEN (162). *A. dispar* as in (169) Zool. Rec. 1897, added locality "Pointe de Galles," 675 fms.; KOEHLER (142) p. 46, pl. x. *A. duplicata* Lym., referred to *Ophiactis* (q.v.); LÜTKEN & MORTENSEN (162) p. 142. *A. eugeniae*, comparative measurements and other differences between young and old, compared with *A. studeri*; LUDWIG (157) p. 8. *A. frigida* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 44, pls. xi, xii. *A. gastracantha*, **n. sp.**, 16° 33′ N., 99° 52′ W., 660 fms. "would belong to *Ophiocnida*" if that genus were accepted; LÜTKEN & MORTENSEN (162) p. 156, pl. xiii. *A. grandisquama*, redescr., some variations from type in Florida specimens; VERRILL (244) p. 26. *A. granulata*, **n. sp.**, 7° 12′ N., 80° 55′ W., 182 fms. "belongs to what is commonly called *Ophiocnida*," also "would be an *Amphipholis*" (p. 155, pl. x); *A. gymnogastra*, **n. sp.**, 7° 5′ N., 79° 40′ W., 1270 fms., very closely related to *A. semiermis*, and less so to *A. lanceolata* (p. 145, pl. ix); *A. gymnopora*, **n. sp.**, 7° 12′ N., 80° 55′ W., 182 fms. (p. 150, pl. xi): LÜTKEN & MORTENSEN (162). *A. magellanica*, not allied to *A. lymani* as Studer thought; LUDWIG (157) p. 10: post-larval growth-stages fully described and compared with those of *A. squamata*; LUDWIG (159) p. 227. *A. misera*, **n. sp.**, 265 fms., Andaman Is., allied to *A. squamata* and *tenuispina*; KOEHLER (142) p. 45, pl. viii. *A. notacantha*, **n. sp.**, 21° 15′ N., 106° 23′ W., 676 fms., "would belong to *Ophiocnida*" if that genus were accepted (p. 158, pl. xiii); *A. papillata*, **n. sp.**, 1° 3′ S., 89° 28′ W., 385 fms., perhaps an *Ophiochiton* (p. 159, pl. xiv): LÜTKEN & MORTENSEN (162). *A. partita* as in (169) Zool. Rec. 1897, added locality "Pointe de Galles," 675 fms.; KOEHLER (142) p. 48, pl. x: referred to *Ophiactis*; LÜTKEN & MORTENSEN (162) pp. 143, 207. *A. patagonica*, neanic individual; LUDWIG (157) p. 11: post-larval growth-stages fully descr. in this viviparous sp., and compared with those of *A. squamata*; LUDWIG (159) p. 230. *A. patula*, Lym., referred to *Ophiactis* (p. 143); *A. polycantha*, **n. sp.**, 7° 6′ N., 80° 43′ W., 695 fms. (p. 146, pl. ix); *A. seminuda*, **n. sp.**, 23° 16′ N., 107° 31′ W., 852 fms. (p. 148, pl. xi); *A. serpentina*, **n. sp.**, 7° 31′ N., 79° 14′ W., 458 fms., with varr. *a*, *b* and *c* from other stations of 'Albatross' (p. 143, pl. viii): LÜTKEN & MORTENSEN (162). *A. squamata*, 87 metres; CONDORELLI (61) p. 35: breeding period, habitat; LO BIANCO (147) p. 469: of New Zealand; LUDWIG (157) pp. 19, 22: post-larval growth-stages compared with those of other *Oph.*; LUDWIG (159) p. 210. *A. stearnsi* Ives "evidently an *Ophionereis*"; LÜTKEN & MORTENSEN (162) p. 207. *A. virens*, breeding period, habitat; LO BIANCO (147) p. 469.

Asteronyx, vide *Astronyx*.

Astrochelidae, **n. fam.**, for *Astrochele*, *Astrogomphus*, *Astroporpa*, *Astrotoma* and *Astrocnida*; VERRILL (244) p. 79.

Astrocnida isidis; VERRILL (244) p. 83.

Astrogomphus rudis, **n. sp.**, 200 fms., Pourtales Plateau, and 116 fms., Sandkey (p. 82, pl. vii); *A. vallatus*, redescr., large regenerated specimen, and various young stages (p. 80): VERRILL (244).

Astronycidae, **n. fam.**, for *Astronyx* and *Astrodia*: VERRILL (244) p. 74.

Astronyx or *Asteronyx*, key to spp. (p. 187); *A. dispar*, **n. sp.**, 7° 9′ N., 80° 50′ W., 322 fms., closely resembles *A. loveni* (p. 185, pls. xxi & xxii); *A. excavata*, **n. sp.**, 21° 15′ N., 106° 23′ W., 676 fms. and 21° 21′ N., 106° 25′ W., 146 fms., with young specimen (p. 185,

pl. xxii): LÜTKEN & MORTENSEN (162). *A. loveni* as in (169) Zool. Rec. 1897, but the locality, previously given as Laccadives, 406 fms., is now omitted [? by mistake]; KOEHLER (142) p. 74. *A. lymani*, **n. sp.**, 200 fms., off Havana, resembles *A. loveni* and *A. locardi*; VERRILL (244) p. 74, pl. viii. *A. plana*, **n. sp.**, 6° 17′ N., 82° 5′ W., 1672 fms., and other stations of 'Albatross'; LÜTKEN & MORTENSEN (162) p. 186, pls. xxi & xxii.

Astrophyton caecilia (p. 85); *A. muricatum*, variations and young (p. 84): VERRILL (244).

Astroporpa annulata, distribution and habitat; VERRILL (244) p. 82.

Astroschema arenosum; VERRILL (244) p. 77. *A. brachiatum* and *A. horridum*; HAECKEL (115) pl. x. *A. intectum* (p. 77); *A. nuttingi*, **n. sp.**, 105 fms., off Sandkey, 125 fms., off Key West (p. 77, pl. vii); *A. oligactes*, distribution, habitat, a 6-rayed specimen (p. 76): VERRILL (244). *A. rubrum*; HAECKEL (115) pl. x. *A. sublaeve*, **n. sp.**, 7° 6′ N., 80° 34′ W., 695 fms., and other stations of 'Albatross,' closely related to *A. clavigera*; LÜTKEN & MORTENSEN (162) p. 187, pl. xxii.

Astroschem[at]idae, **n. fam.**, for *Astroschema*, *Astrocreas* and *Ophiocreas*; VERRILL (244) p. 76.

Drepanaster, **n. g.**, pro *Protaster scabrosus* (q.v.) et *P. forbesi*; WHIDBORNE (250) p. 208.

†*Ephippiellidae*, **n. fam.** (of *Foraminifera*) pro *Ephipipiellum*; ŁOMNICKI (152 B) p. 227.

†*Ephipipiellium symmetricum*, **n. g. et sp.**, Miocene of Wieliczka, Galicia supposed Foraminifer; ŁOMINICKI (152 B) p. 224, pl.-f. 3: but shown to be only arm-vertebrae of *Oph.*; SZAJNOCHE (226).

†*Eucladia*:—*E. johnsoni*, orientation and arm-structures (p. 692); *E. woodwardi*, **n. sp.**, Lower Ludlow sandstone, Leintwardine, Shropshire (p. 695), with reconstructed figg. 1 & 2: SOLLAS (216).

†*Eugaster ?perarmatus* Whidb., Pilton beds of Braunton Down, in Mus. Pract. Geol., and of Pilton, in Porter coll., now first descr. and figd.; WHIDBORNE (250) p. 209, pl. xxvii.

†*Euthemon*, **n. g.**, of *Eucladidae*, with genotype *E. igerna*, **n. sp.**, Wenlock Limestone, Malvern district, England: SOLLAS (216) p. 696, fig. 3, and reconstruction fig. 4.

Gorgonocephalidae, restr.; VERRILL (244) p. 83.

Gorgonocephalus chilensis; LUDWIG (157) p. 16. *G. cornutus* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 73, pls. xii, xiii. *G. diomedeae*, **n. sp.**, 7° 6′ N., 80° 34′ W., 695 fms., an abnormal specimen; LÜTKEN & MORTENSEN (162) p. 188, pls. xxi, xxii. *G. lamarcki*; BIDENKAP (38) p. 111. *G. levigatus* as in (169) Zool. Rec. 1897, but a well-preserved specimen from Trincomalee is added, and comparative measurements given; KOEHLER (142) p. 71, pls. xii, xiv. *G. mucronatus*, colour, variations in spines; VERRILL (244) p. 85. *G. robillardi*, **n. sp.**, Mauritius, on a gorgonian, resembles "*Astrophyton costosum A. costis conicis in basi reclinata laceris*" of Linck., p. 64; LORIOL (154) p. 31, pl. iii.

Gymnophiura, **n. g.**, closely related to *Ophioglypha*, esp. *O. inermis*, with genotype *G. mollis* (p. 111); *G. coerulescens*, **n. sp.**, 23° 59′ N., 108° 40′ W., 995 fms., perhaps should be *Ophioglypha* (p. 114, pl. vii); *G. mollis*, **n. sp.**, 7° 5′ N., 79° 40′ W., 1270 fms., and other stations of 'Albatross' (p. 111, pl. vii): LÜTKEN & MORTENSEN (162).

Hemieuryalidae, **n. fam.**, for *Hemieuryale*, *Ophioplus*, and *Sigsbeia*; VERRILL (244) p. 70.

Hemilepis, subgenus [?**n. s-g.**] of *Amphiura*; VERRILL (244) p. 26.

Hemipholis cordifera and *H. wallichi*, cf. post-larval growth-stage of *Ophiactis asperula*: LUDWIG (159) p. 222.

Ophiacantha, systematic importance of spines; LÜTKEN & MORTENSEN

(162) p. 165: restricted; VERRILL (244) pp. 36, 41. *O. aspera*, variations from the type in Havana specimens; VERRILL (244) p. 44. *O. bairdi*, a specimen of this Atlantic sp., from 23° 59′ N., 108° 40′ W., 995 fms., additions to Lyman's account; LÜTKEN & MORTENSEN (162) p. 177, pl. xviii. *O. bidentata*; BIDENKAP (37) p. 100, and (38) p. 111. *O. composita* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 59, pls. viii, ix. *O. contigua*, **n. sp.**, 4° 3′ N., 81° 31′ W., 899 fms. (p. 173, pls. xvi, xvii); *O. cosmica*, specimens from E. Pacific, showing slight variations fr. Lyman's type (p. 166, pl. xv); *O. costata*, **n. sp.**, 7° 6′ N., 80° 34′ W., 695 fms., and other stations of 'Albatross,' rather nearly related to *O. discoidea* (p. 172, pls. xvi, xvii): LÜTKEN & MORTENSEN (162). *O. duplex* as in (169) Zool. Rec. 1897 (p. 60, pls. viii & ix); *O. gratiosa*, ditto (p. 56, pls. viii & ix): KOEHLER (142). *O. hirta*, **n. sp.**, 21° 19′ N., 106° 24′ W., 680 fms., and 23° 16′ N., 107° 31′ W., 852 fms.; LÜTKEN & MORTENSEN (162) p. 174, pl. xviii. *O. hirsuta*, vide sub *O. sertata*, *Ophiopristis*. *O. inconspicua*, **n. sp.**, 6° 35′ N., 81° 44′ W., 782 fms., and other stations of 'Albatross,' also young of this or of *O. pentacrinus*; LÜTKEN & MORTENSEN (162) p. 168, pl. xv. *O. lineolata*, vide sub *Ophiopristis*. *O. moniliformis*, **n. sp.**, 16° 32′ N., 99° 48′ W., 493 fms., and other stations of 'Albatross' (p. 171, pl. xvi); *O. normani*, specimens fr. E. Pacific, showing slight differences fr. Lyman's type (p. 170, pl. xvi): LÜTKEN & MORTENSEN (162). *O.* (*Ophialcaea*) *nuttingi*, **n. sp.**, 200 fms. off Havana; VERRILL (244) pp. 43, 46, pls. i, viii. *O. pacifica*, **n. sp.**, 1° 7′ N., 80° 21′ W., 1573 fms. (p. 166, pls. xv, xvi); *O. paucispina*, **n. sp.**, 6° 10′ N., 83° 6′ W., 1471 fms., and other stations of 'Albatross,' nearly related to *O. bartletti* (p. 175, pl. xviii): LÜTKEN & MORTENSEN (162). *O. pentagona* as in (169) Zool. Rec. 1897, added locality, C. Bluff; KOEHLER (142) p. 53, pl. iv. *O. rosea*, evidence for bipolarity; THOMPSON (230) p. 321. *O. sertata*, vide sub *Ophiopristis*. *O. sociabilis* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 58, pls. x, xi. *O. spinifera*, **n. sp.**, 7° 9′ N., 81° 8′ W., 546 fms., and 7° 15′ N., 79° 36′ W., 1020 fms.; LÜTKEN & MORTENSEN (162) p. 169, pls. xvi, xvii. *O. stellata*; VERRILL (244) p. 45. *O. vestita* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 54, pl. iii. *O. vivipara*, 3 post-larval growth-stages descr. in detail; LUDWIG (159) p. 232: measurements, granules of disc, spicules in bursa walls, arm-spines hollow, and other features compared with var. *kerguelensis*, the validity of which is doubted; LUDWIG (157) p. 13. *O. vorax* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 62, pl. vii.

Ophiacanthella, **n. g.**, with genotype *O. troscheli* (Lym.); VERRILL (244) pp. 39, 43.

Ophiacanthidae, **n. fam.** = *Ophiacanthinae* of Ljungman and Lütken, with analytical table of genera and species; VERRILL (244) p. 34.

Ophiactis asperula, colour, size, arm-spines, variation in dorsal spines, young on disc; LUDWIG (157) p. 6: post-larval growth-stages compared with those of other *Oph.* and fully described with text-figg.; LUDWIG (159) p. 212. *O. balli*, distribution, habitat, habits; ALLEN (8) p. 470. *O. dispar*, **n. sp.**, Bahama Banks, perhaps a var. or adult of *O. krebsi*; VERRILL (244) p. 31, pl. viii. *O. duplicata* (Lym.), an Atlantic sp. now found in E. Pacific with slight differences; LÜTKEN & MORTENSEN (162) p. 142, pl. vi. *O. krebsi*, maintained, but perhaps the ordinary specimens are young; VERRILL (244) p. 34. *O. kröyeri*, post-larval growth-stages, fully described and compared with those of other *Oph.*, with text-figg.; LUDWIG (159) p. 223. *O. lorioli* as in (169) Zool. Rec. 1897; KOEHLER (142), p. 41, pl. vi: referred to *Amphiura*; LÜTKEN & MORTENSEN (162) pp. 143, 207. *O. muelleri*; CLARK (56) p. 130: var. *quinqueradia* discussed; VERRILL (244)

p. 32. *O. perplexa* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 40, pl. vi. *O. profundi*, **n. sp.**, 4° 3′ N., 81° 31′ W., 899 fms., and 0° 16′ S., 90° 21′ W., 551 fms., closely related to *O. flexuosa* and *O. plana*; LÜTKEN & MORTENSEN (162) p. 140, pl. vi. *O. savignyi*; l. c. p. 140: incl. *O. sexradia* Grube and *O. incisa* v. Martens, 7 are 6-rayed, the eighth is regenerating, Zanzibar; LUDWIG (158) p. 545. *O. virens*, measurements; CONDORELLI (61) p. 35.

Ophialcaea, **n. s-g.** of *Ophiacantha*, with genotypes *O. nuttingi* n. sp. and *O. tuberculosa* Lym.; VERRILL (244) pp. 38, 42.

Ophiarthrum elegans, colour in life, plates in dorsal disc-covering, marginals; LUDWIG (158) p. 547.

Ophiectodia, **n. s-g.** of *Ophiacantha*, incl. *O. enopla* Verr., *O. rosea* Lym., and *O. spectabilis* Sars; VERRILL (244) p. 42.

Ophientodia, **n. s-g.**, of *Ophiacantha*, incl. *O. scutata* Lym., *O. cuspidata* Verr., and *O. pectinula* Verr.; VERRILL (244) p. 41.

Ophiernus adspersus as in (169) Zool. Rec. 1897; KOEHLER (142) p. 32. *O. annectens*, **n. sp.**, 0° 57′ S., 89° 3′ W., 421 fms., closely allied to *O. adspersus* fr. Atlantic (p. 107, pl. v); *O. polyporus*, **n. sp.**, 7° 9′ N., 81° 8′ W., 546 fms. (p. 109, pl. v); *O. seminudus*, **n. sp.**, 6° 17′ N., 82° 5′ W., 1672 fms., and other stations of 'Albatross,' closely related to *O. vallincola* fr. Atlantic (p. 105, pl. v): LÜTKEN & MORTENSEN (162). *O. vallincola*, evidence for bipolarity; THOMPSON (230) p. 321.

Ophiocamax austera, **n. sp.**, 110 fms., off Havana, allied to *O. fasciculata* and *O. hystrix*; VERRILL (244) p. 60, pls. vi, vii. *O. fasciculata* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 67.

Ophioceramis clausa, cf. post-larval growth-stage of *Ophiactis asperula*; LUDWIG (159) p. 222. *O. tenera* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 33, pl. v.

Ophiochiton ambulator as in (169) Zool. Rec. 1897, added localities "Delta du Godavery," "Côte de Malabar," added comparison with *O. lymani* and *O. grandis*; KOEHLER (142) p. 49, pl. vi. *O. carinatus*, **n. sp.**, 7° 9′ N., 80° 50′ W., 322 fms., and other stations of 'Albatross'; LÜTKEN & MORTENSEN (162), p. 164, pl. xiv. *O. modestus* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 51, pls. ix, x: possibly an *Amphiura*; LÜTKEN & MORTENSEN (162) p. 160.

Ophiochondrus gracilis, **n. sp.**, 110–260 fms., off Havana; VERRILL (244) p. 64, no figure.

†*Ophiocistia*, **ord. nov.** incl. *Eucladidae*; SOLLAS (216) p. 692.

Ophiocnida, genus not accepted; LÜTKEN & MORTENSEN (162) p. 156. *O. brachiata*, rediscovered at Salcombe, Devon; NORMAN (183) p. 289.

Ophocoma brevipes, incl. *O. insularia* Lym. and *O. ternispina* v. Martens, fr. Zanzibar and Aldabra Id.; LUDWIG (158) p. 546. *O. doederleini*, **n. sp.**, Mauritius, compared with *O. scolopendrina*; LORIOL (154) p. 30, pl. iii. *O. echinata*; CLARK (56) p. 131; VERRILL (244) p. 22. *O. erinaceus*; BELL (32) p. 139. *O. nigra*, distribution, habitat, habits, food; ALLEN (8) p. 470. *O. pica*; BELL (32) p. 139. *O. pumila*; CLARK (56) p. 131; VERRILL (244) p. 23. *O. riisei*; VERRILL (244) p. 22. *O. rosula*; HAECKEL (115) pl. x. *O. scolopendrina*, perhaps identical with *O. erinaceus*; BELL (32) p. 139: incl. *O. erinaceus* M. & Tr., *O. schoenleinii* M. & Tr., *O. alternans* v. Martens, from Zanzibar and Aldabra Id.; LUDWIG (158) p. 545. *O. valenciae*; LUDWIG (158) p. 547.

Ophioconis indica as in (169) Zool. Rec. 1897; KOEHLER (142) p. 39, pl. ii. *O. miliaria*, slight variation from type; VERRILL (244) p. 17.

Ophiocreas sp. as in (169) Zool. Rec. 1897; KOEHLER (142) p. 70. *O. lumbricus*; VERRILL (244) p. 78. *O. oedipus*; HAECKEL (115) pl. x. *O. spinulosus*; VERRILL (244) p. 79.

Ophiocten amitinum, measurements, colour, not viviparous; LUDWIG

(157) p. 4. *O. hastatum*, evidence for bipolarity; THOMPSON (230) p. 321. *O. pacificum*, **n. sp.**, 5° 43′ N., 85° 50′ W., 978 fms., and many other stations of 'Albatross'; LÜTKEN & MORTENSEN (162) p. 131, pl. iii. *O. sericeum*, evidence for bipolarity; THOMPSON (230) p. 320.

Ophiodera, **n. g.**, with genotype *O. serpentaria* (Lym.); VERRILL (244) pp. 65, 67. *O. stimpsoni* Verrill [but perhaps intended as **n. sp.**], ? incl. *Ophioscolex stimpsoni* Lyman, described; VERRILL (244) p. 67, pl. ii.

Ophioderma brevispina and *O. holmesi*, perhaps identical with *O. variegata*; LÜTKEN & MORTENSEN (162) p. 101. *O. longicauda*; CONDORELLI (61) p. 34. *O. panamensis* (p. 100); *O. variegata*, specimen fr. Panama, slightly different from type (p. 100, pl. i): LÜTKEN & MORTENSEN (162).

Ophioglypha, subdivisions discussed (p. 129); *O. abcisa*, **n. sp.**, 5° 36′ N., 86° 56′ W., 134 fms. (p. 117, pl. v): LÜTKEN & MORTENSEN (162). *O. acervata*; VERRILL (244) p. 12. *O. aequalis* as in (169) Zool. Rec. 1897, added locality Andaman Is.; KOEHLER (142) p. 16, pl. v. *O. bullata*, evidence for bipolarity; THOMPSON (230) p. 321. *O. convexa*, dorsal plates; LUDWIG (159) p. 218. *O. divisa*, **n. sp.**, 0° 54′ N., 91° 9′ W., 1189 fms., and 2° 34′ N., 92° 6′ W., 1360 fms., very near to *O. inornata*, also a young specimen; LÜTKEN & MORTENSEN (162) p. 127, pls. iv, v. *O flagellata* as in (169) Zool. Rec. 1897, added locality Colombo; KOEHLER (142) p. 18. *O. forbesi*, not intermediate between *Ophioglypha* and *Ophiomusium*, as Koehler says; LÜTKEN & MORTENSEN (162) p. 130. *O. imbecillis* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 21. *O. inermis*, should perhaps be included in *Gymnophiura*; LÜTKEN & MORTENSEN (162) p. 115. *O. inflata* (p. 10, pl. xi), *O. involuta* (p. 15, pl. viii): both as in (169) Zool. Rec. 1897; KOEHLER (142). *O. irrorata*, evidence for bipolarity; THOMPSON (230) p. 320. *O. lacertosa*, breeding period, habitat; LO BIANCO (147) p. 471. *O. lymani*, measurements and notes; LUDWIG (157) p. 5. *O. minuta*, cf. post-larval growth-stage of *Ophiactis asperula*; LUDWIG (159) p. 223. *O. nana*, **n. sp.**, 5° 30′ N., 86° 8′ W., 902 fms. (p. 126, pl. ii); *O. obtecta*, **n. sp.**, 0° 36′ S., 86° 46′ W., 1322 fms., and other stations of 'Albatross' (p. 119, pl. ii): LÜTKEN & MORTENSEN (162). *O. orbiculata* as in (169) Zool. Rec. 1897, but Laccadive Is. omitted from localities (p. 21); *O. palliata* as in (169) Zool. Rec. 1897 (p. 18); *O. paupera*, idem (p. 11, pl. iv): KOEHLER (142). *O. plana*, **n. sp.**, 6° 35′ N., 81° 44′ W., 782 fms., and many other stations of 'Albatross,' neanic specimens also descr., sp. allied to *O. tumulosa*; LÜTKEN & MORTENSEN (162) p. 122, pl. iii. *O. radiata* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 19. *O. robusta*; BIDENKAP (37) p. 100: colour; BIDENKAP (38) p. 110. *O. sculptilis* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 21. *O. scutata*, cf. post-larval growth-stage of *Ophiactis asperula*; LUDWIG (159) p. 222. *O. scutellata*, **n. sp.**, 21° 19′ N., 106° 24′ W., 680 fms.; LÜTKEN & MORTENSEN (162) p. 125, pl. ii. *O. solida*, post-larval growth-stages; LUDWIG (159) pp. 219, 220. *O. sordida* as in (169) Zool. Rec. 1897, but more detailed comparison with *O. paupera*; KOEHLER (142) p. 13, pl. v. *O. superba*, **n. sp.**, 23° 59′ N., 108° 40′ W., 995 fms., and 16° 34′ N., 100° 3′ W., 772 fms. (p. 116, pl. vii); *O. tumulosa*, **n. sp.**, 6° 17′ N., 82° 5′ W., 1672 fms., and many other stations of 'Albatross,' neanic specimens also descr. and figd, sp. recalls *O. grandis* (p. 120, pl. i): LÜTKEN & MORTENSEN (162). *O. undulata* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 19.

Ophioglyphina Ludw. s. g. of *Ophioglypha*, includes spp. which are not closely related; LÜTKEN & MORTENSEN (162) p. 129.

Ophiolepis annulosa; BELL (32) p. 139; LUDWIG (158) p. 544.

Ophiolimna, **n. g.**, with genotype *O. bairdi* (Lym.); VERRILL (244) pp. 40, 44.

Ophiolypus granulatus as in (169) Zool. Rec. 1897; KOEHLER (142) p. 3
pl. vii.

Ophiomastix annulosa and *O. mixta*; BELL (32) p. 139. *O. venosa*, plat
in dorsal disc-covering; LUDWIG (158) p. 548.

Ophiomastus secundus, dorsal plates (p. 217); *O. tegulitius*, post-larv
growth-stages (p. 219): LUDWIG (159). *O. tumidus*, idem, *l.* c
as in (169) Zool. Rec. 1897; KOEHLER (142) p. 8, pl. i.

Ophiomitra, redefined; VERRILL (244) p. 57: "a very ill defined genu
which can scarcely be upheld"; LÜTKEN & MORTENSEN (162) p. 17
O. granifera, **n. sp.**, 21° 15′ N., 106° 23′ W., 676 fms., and 21° 21′ N
106° 25′ W., 146 fms.; LÜTKEN & MORTENSEN (162) p. 177, pl. xi
O. integra as in (169) Zool. Rec. 1897; KOEHLER (142) p. 64, pls. v an
vii. *O. normanni*, replaced in *Ophiacantha*; LÜTKEN & MORTENSE
(162) p. 171. *O. ornata*, **n. sp.**, 110 and 200 fms., off Havana
VERRILL (244) p. 58, pl. v. *O. partita*, **n. sp.**, 21° 15′ N., 106° 23′ W
676 fms.; LÜTKEN & MORTENSEN (162) p. 179, pl. xix. *O. rudis* as i
(169) Zool. Rec. 1897, added localities Laccadive Is., 705 fms., Maldiv
Is., 719 fms.; KOEHLER (142) p. 65, pl. vii. *O. valida*; VERRILL (24
p. 58.

Ophiomitrella, **n. g.**, with genotype *O. laevipellis* (Lym.); VERRILL (24
pp. 39, 43.

Ophiomusium subdivided into A. spp. with ventral plates in most of th
length of the arm, *a*, genital slits do not reach margin of disc, *b*, larg
genital slits reach margin of disc, B. spp. with ventral plates only o
3–5 proximal segments of arm; LÜTKEN & MORTENSEN (162) p. 13
O. diomedeae, **n. sp.**, 1° 3′ S., 89° 28′ W., 385 fms., also a younger stag
sp., resembles *O. familiare*; LÜTKEN & MORTENSEN (162) p. 134, pl. i
O. eburneum, var. *elegans* Verrill [? **var. nov.**], 110–260 fms. o
Havana; VERRILL (244) p. 12, pl. iii. *O. elegans* as in (169) Zoo
Rec. 1897, but Malabar is substituted for Laccadives as a localit
(p. 23, pl. iii); *O. familiare* as in (169) Zool. Rec. 1897, but localiti
given are coast of Malabar and Maldive Is., not Laccadives (p. 2
pl. iv): KOEHLER (142). †*O. ferrugineum* (p. 222) and *O. flabellu*
(p. 223), cf. postlarval growth-stage of *Ophiactis asperula*; LUDW
(159). *O. glabrum*, **n. sp.**, 5° 56′ N., 85° 10′ W., 1175 fms., an
many other stations of 'Albatross,' with younger specimens; LÜTKE
& MORTENSEN (162) p. 132, pl. iv. *O. lunare*, cf. post-larval growt
stage of *Ophiactis asperula* (p. 222); *O. lymani*, post-larval growt
stages (p. 220): LUDWIG (159): redescr. and figd., also very you
specimens; LÜTKEN & MORTENSEN (162) p. 137, pl. iii. *O. planu*
as in (169) Zool. Rec. 1897; KOEHLER (142) p. 26. *O. pulchellu*
post-larval growth-stages, LUDWIG (159) p. 220. *O. scalare* as
(169) Zool. Rec. 1897; KOEHLER (142) p. 26, pls. ii, iii. *O. sculptu*
n. sp., 110–260 fms. off Havana, allied to *O. acuferum*; VERRI
(244) p. 16, pls. ii, viii. *O. simplex*; BELL (32) p. 139. *O. stellatu*
n. sp., 110–260 fms. off Havana, resembles the Japanese *O. cancellatu*
(p. 14, pl. i); *O. testudo* (p. 14): VERRILL (244). *O. validum*
in (169) Zool. Rec. 1897; KOEHLER (142) p. 25. *O. variabile*, **n. sp**
16° 32′ N., 99° 48′ W., 493 fms., and a variation from 21° 21′ N., 10
25′ W., 146 fms., sp. resembles *O. elegans*; LÜTKEN & MORTENSE
(162) p. 135, pl. iv.

Ophiomyxa bengalensis as in (169) Zool. Rec. 1897; KOEHLER (14
p. 69, pl. xii. *O. brevicauda*, **n. sp.**, 110 and 200 fms., off Havana
VERRILL (244) p. 66, pl. iii. *O. flaccida*; CLARK (56) p. 131: colou
VERRILL (244) p. 65. *O. panamensis*, **n. sp.**, 7° 33′ N., 78° 34′ W
85 fms., and Panama; LÜTKEN & MORTENSEN (162) p. 182, pl. v
O. pentagona, 87 metres; CONDORELLI (61) p. 35: breeding perio
LO BIANCO (147) p. 472. *O. tumida*; VERRILL (244) p. 67, pl. i

O. vivipara, measurements; LUDWIG (157) p. 15; post-larval growth-stages sought for, but only one found; LUDWIG (159) p. 235.
Ophiomyxidae, redefined; VERRILL (244) p. 65.
Ophionereis annulata, from Panama (p. 162, pl. xiii); *O. nuda*, **n. sp.**, 7° 33′ N., 78° 34′ W., 85 fms., and 0° 57′ S., 89° 38′ W., 53 fms. "apparently nearly related to *Ophiotriton semoni*" (p. 163, pl. xiv): LÜTKEN & MORTENSEN (162). *O. reticulata*; VERRILL (244) p. 30: habitat, CLARK (56) pp. 118, 131.
Ophiopaepale goesiana, colour; VERRILL (244) p. 8.
Ophiopelte, subgenus [? **n. s-g.**] of *Amphiura*; VERRILL (244) p. 25.
Ophiopeza custos as in (169) Zool. Rec. 1897; KOEHLER (142) p. 35, pl. iii. *O. petersi*; VERRILL (244) p. 8.
Ophiopholis aculeata; BIDENKAP (37) p. 100.
Ophiophthirius actinometrae dorsal plates (p. 218), hooked spines not a generic character (p. 216); LUDWIG (159).
Ophioplax ljungmani; VERRILL (244) p. 31.
Ophioplocus huttoni, **n. sp.**, among sea-weed at Lyall B., near Wellington, N. Z.; FARQUHAR (84). *O. imbricatus*, Zanzibar, measurements; LUDWIG (158) p. 544.
Ophioplus, **n. g.** (p. 70) with genotype *Hemieuryale tuberculosa* Lym. redescr. (p. 71, pl. i); VERRILL (244).
Ophiopristis, **n. g.**, with genotype *O. hirsuta* (Lym.) (pp. 39, 40, 44); *O. ensifera*, **n. sp.**, 110–260 fms. off Havana (p. 47, pl. iv); *O. hirsuta*, variations from the type in Havana specimens (p. 49); *O.* (*Ophiotreta*) *lineolata*, variations from the type and from Lyman's figures, in Havana specimens (p. 51); *O.* (*Ophiotreta*) *sertata*, variations from original description (p. 54): VERRILL (244).
Ophiopora, **n. g.**, with genotype *O. bartletti* (Lym.); VERRILL (244) pp. 39, 43.
Ophiopsila annulosa, breeding period, phosphorescent; *O. aranea*, breeding period, habitat: LO BIANCO (147) p. 472. *O. riisei*; VERRILL (244) p. 23.
Ophiopyren bispinosus as in (169) Zool. Rec. 1897; KOEHLER (142).
Ophiopyrgus alcocki as in (169) Zool. Rec. 1897; KOEHLER (142) p. 6, pl. i: post-larval growth-stages; LUDWIG (159) p. 219. *O. saccharatus*, dorsal plates; LUDWIG (159) p. 218: perhaps intermediate between *Ophiopyrgus* and *Ophioglypha*; KOEHLER (142) p. 8. *O. wyville-thomsoni*, post-larval growth-stages; LUDWIG (159) p. 219.
Ophioscalus, **n. g.** [or ? **n. s-g.** of *Ophiacantha*] with genotype *O. echinulatus* (Lym.); VERRILL (244) pp. 39, 42.
Ophiostigma isacantha; CLARK (56) p. 131.
Ophiothamnus, diagnosed; VERRILL (244) p. 40: "as ill defined as *Ophiomitra*"; LÜTKEN & MORTENSEN (162) p. 181. *O. laevis*, **n. sp.**, 0° 16′ S., 90° 21′ W., 551 fms., "some resemblance to *O. remotus*"; op. cit. p. 180, pl. xix.
Ophiotholia supplicans; HAECKEL, p. 115, pl. x.
Ophiothrichidae diagnosed; VERRILL (244) p. 18.
Ophiothrix alopecurus, breeding period, habitat; LO BIANCO (147) p. 472.
O. angulata, variations, colour, and brephic examples; VERRILL (244) p. 18. *O. aristulata*, var. *investigatoris* as in (169) Zool. Rec. 1897; KOEHLER (142) p. 67, pl. xi. *O. capillaris*; HAECKEL (115) pl. x. *O. echinata*; CONDORELLI (61) p. 35: breeding period, habitat, commensal; LO BIANCO (147) p. 472. *O. fragilis*; CONDORELLI (61) p. 35: distribution, habitat, habits, food; ALLEN (8) p. 471: breeding period, habitat; LO BIANCO (147) p. 472: breeding period; AURIVILLIUS (21) p. 13. *O. galapagensis*, **n. sp.**, 0° 57′ S., 89° 38′ W., 53 fms., 4 specimens, of which one has 6 arms; LÜTKEN & MORTENSEN (162) p. 181, pl. xx. *O. hirsuta*; LUDWIG (158) p. 549. *O. oerstedi*, colour; VERRILL

(244) p. 20. *O. otiosa*, Zanzibar, under stones; LUDWIG (158) p. 5
O. spiculata, Panama; LÜTKEN & MORTENSEN (162) p. 181. *O. su*
sonii, colour; VERRILL (244) p. 21.

Ophiothyreus goesi; VERRILL (244) p. 12.

Ophiotreta, **n. s-g.** of *Ophiopristis*, with genotype *O. lineolata* Lyn
VERRILL (244) pp. 40, 44.

Ophiotriton, genus not accepted; LÜTKEN & MORTENSEN (162) p. 163.

Ophiotrochus panniculus as in (169) Zool. Rec. 1897, but the depth
1200 fms. is now quoted as from Minicoy; KOEHLER (142) p. 29.

Ophiotypa simplex discussed; LUDWIG (159) p. 213: as in (169) Zo
Rec. 1897, but added comparison with young stages of other *Op*
KOEHLER (142) p. 3, pl. i.

Ophiozona alba, **n. sp.**, 5° 56′ N., 85° 10′ W., 1175 fms., and other statio
of 'Albatross,' allied to *O. depressa*, slight variations; LÜTKEN
MORTENSEN (162) p. 102, pl. vi. *O. bispinosa* as in (169) Zool. R
1897; KOEHLER (142) p. 34, pl. ii. *O. contigua*, **n. sp.**, 0° 36′
86° 46′ W., 1322 fms., and 2° 34′ N., 92° 6′ W., 1360 fms.; LÜTKEN
MORTENSEN (162) p. 101, pl. vi. *O. impressa* (p. 8); *O. nivea*, redes
with var. *compta* Verrill [? **var. nov.**] 110–263 fms. off Havana, 2
fms. Barbados, variation in oral shields (p. 9, pl. iii): VERRILL (244)

Ophiura:—†*O.* ?; DIBLEY (75). *O. affinis*, distribution, habitat, habit
ALLEN (8) p. 470. *O. albida*; BIDENKAP (37) p. 100: in Tromsö Sou
colour, measurements, distinction from *O. carnea*; BIDENKAP (3
p. 110: distribution, habitat, habits; ALLEN (8) p. 468. *O. appress*
CLARK (56) p. 130; VERRILL (244) p. 6. *O. brevicauda* (p. 5);
brevispina with var. *olivacea*, and unnamed varieties (p. 4): VERRI
(244). *O. ciliaris*, distribution, habitat, habits, food; ALLEN (
p. 468. *O. cinerea*; VERRILL (244) p. 6. *O. olivacea*, embryolog
GRAVE (110). *O. pallida*, **n. sp.**, 110 and 200 fms. off Havana (p.
pl. ii); *O. rubicunda*, colour in life and alcohol (p. 6): VERRILL (24
O. sarsii; BIDENKAP (37) p. 100: young very like *O. albida*; BIDE
KAP (38) p. 110. *O. texturata*, breeding period; AURIVILLIUS (
p. 13.

†*Ophiurella* ? *gregaria*, Whidb., Pilton beds of Braunton Down, in M
Pract. Geol., now first descr. and figd., compared with *Protas*
leptosoma, *Furcaster palaeozoicus*, and *Ophiura rhenana*; WHIDBOR
(250) p. 210, pl. xxviii.

Pectinura angulata; VERRILL (244) p. 8. *P. conspicua* (p. 37, pl. ii) a
P. heros (p. 38), as in (169) Zool. Rec. 1897; KOEHLER (142).

Pectinuridae **nom. nov.** pro *Ophiodermatidae*; VERRILL (244) p. 4.

Pluteus paradoxus; HAECKEL (115) pl. x.

Polypholis echinata, cf. post-larval growth-stage of *Ophiactis asperul*
LUDWIG (159) p. 222.

†*Protaster*, vide etiam sub IV, D. *P. decheni* confused with "*Agelacrinu*
Mourlon, 1881, its geological range; DEWALQUE (73), vide etia
BATHER (23). *P. granifer* Whidb. (sub *Eugaster*), Pilton be
N. Devon, in Mus. Pract. Geol., now first descr. and figd., compar
with *P. sedgwickii* (p. 207, pl. xxvi); *P.*? (*Drepanaster*) *scabros*
Whidb., Pilton beds of Croyde and Braunton Down, N. Devon,
Barnstaple Athenæum and Mus. Pract. Geol., now first descr. and fig
(p. 208, pl. xxix) with var. from various localities (p. 208, pls. xxv
xxviii), sp. allied to *P. forbesi*, with which it may form a distin
genus *Drepanaster*: WHIDBORNE (250).

Sigsbeia lineata, **n. sp.**, 0° 57′ S., 89° 38′ W., 53 fms., very nearly relat
to *S. murrhina*; LÜTKEN & MORTENSEN (162) p. 183, pl. xx.
murrhina, variations from Lyman's figure; VERRILL (244) p. 72, pl.

(F.)—CRINOIDEA.

Origin and evolution of *Crinoidea*, with phylogenetic classification into Sub-class *Monocyclica*, with Orders *Inadunata*, *Adunata*, and *Camerata*, and Sub-class *Dicyclica*, with Orders *Inadunata*, *Flexibilia*, and *Camerata*; BATHER (22) pp. 918, 921. Classification of Wachsmuth & Springer (336) Zool. Rec. 1897, criticised; JAEKEL (129) p. 380. Classification, with reference to Palæozoic *Crin.* of Bohemia; WAAGEN & JAHN (246) pp. 9–11.

†*Abacocrinus*, vide *Xenocrinidae*.

†*Acacocrinus*, subgenus of W. & Sp., should be genus; BATHER (24) p. 122. †*Acacocrinus* vide *Carpocrinidae*.

†*Acanthocrinus*;—A. cf. *gregarius* (*longispina*) [sic] (p. 57); *A.* cf. *rex* (p. 10): FUCHS (100).

†*Achradocrinus*, vide *Gasterocomidae*.

†*Actinocrinidae*, W. & Sp., erected into sub-order *Actinocrinoidea*, and divided into *Actinocrinidae* (s. str.) and *Amphoracrinidae*; BATHER (22) p. 922, and (24) p. 121.

†*Actinocrinoidea*, **sub-ord. nov.** of *Camerata monocyclica*, incl. *Actinocrinidae* and *Amphoracrinidae*; BATHER (22) p. 922, and (24) p. 121.

†*Actinocrinus*:—*A.* ? *batheri* Whidb., Pilton beds of Braunton, in Mus. Pract. Geol. and of Sloly in Woodwardian Mus., now first descr. and figd. (p. 222, pl. xxxii); *A. porteri*, Whidb., Pilton beds of Braunton, Barnstaple, N. Devon, and Pilton, in Mus. Pract. Geol., Woodwardian Mus., and Porter Coll., now first descr. and figd., abnormality, parasitic *Capulus* (p. 220, pls. v, xxx, xxxi, xxxii): WHIDBORNE (250).

Actinometra sp., Rotuma; BELL (33) p. 849. *A. belli*, brachia of young; DOEDERLEIN (77) p. 479, pl. xxxvi. *A. bennetti*, and *A. grandicalyx* ?; BELL (32) p. 134. *A. parvicirra*; l. c.: brachia (p. 479, pl. xxxvi); *A. paucicirra*, brachia, distribution of syzygies, colour (p. 479); *A. pectinata*, cirri, brachia (p. 478); *A. regalis*, cirri, brachia, colour (p. 480); *A. solaris*, cirri, brachia, colour (p. 478): DOEDERLEIN (77). *A. typica*; BELL (32) p. 134.

Actinometridae, referred to *Flexibilia pinnata*; BATHER (22) p. 923.

†*Adelocrinus*, validity of genus discussed, referred to *Hexacrinidæ* (p. 223); *A. hystrix*, redescr. fr. holotype in Mus. Pract. Geol. and other specimens, perhaps is an *Arthracantha* (p. 224, pl. xxx): WHIDBORNE (250).

†*Adunata*, **ord. nov.** of *Crinoidea monocyclica*, defined, and divided into Group A. Fam. *Platycrinidae*, sub-Famm. *Coccocrininae*, *Cypellocrininae*, *Platycrininae*, and Group B. Fam. *Hexacrinidae*, *Acrocrinidae*; BATHER (22) p. 921, and (24) p. 119.

†*Aesiocrinus*, vide *Graphiocrinidae*.

†*Agassizocrinus*, vide *Cromyocrinidae*.

†*Allocrinus*, vide *Patelliocrinidae*.

†*Amphoracrinidae*, **n. fam.** pro *Amphoracrinus*, not further defined; BATHER (22) p. 922.

†*Ancyrocrinus bulbosus*; GRABAU (108) p. 285: "variously deformed individuals" [scilicet radices]; GRABAU (107) p. 146, fig. 28.

†*Anisocrinus*, vide *Taxocrinidae*.

Antedon, migration of anal; BATHER (24) pp. 33, 34, text-fig. 10. †*A.* sp. [from description appears to be *Bourgueticr.* columnals], Lower Cenomanian, of Rucar, Valea lui Ecle, Roumania; POPOVICI-HATZEG (193) p. 4. *A. abyssicola*, evidence for bipolarity; THOMPSON (230) p. 321. *A. bidens*, cirri, brachia, covering-plates on genital pinnules, colour; DOEDERLEIN (77) p. 476, pl. xxxvi. *A. bifida*, vide *A. rosacea*. *A. elegans*, cirri, colour; DOEDERLEIN (77) p. 475, pl. xxxvi. *A. eschrichti*; ALBERT, Prince de MONACO (6) p. 214. *A. flagellata*, Zanzibar; LUDWIG (158) p. 538. *A. imparipinna*, brachia; DOEDER-

LEIN (77) p. 477. *A. indica*; BELL (32) p. 133. *A. ludovici* (p. 477); *A. microdiscus*, cirri, brachia, tegminals, colour (p. 476, pl. xxxvi): DOEDERLEIN (77). *A. phalangium*; ALBERT, Prince de MONACO (6) p. 214: breeding period, depths, parasites; LO BIANCO (147) p. 469. *A. rhomboidea*, about 30 metres, Smyth Channel, Patagonia; LUDWIG (156). *A. rosacea* [i.e. *bifida*], origin of sexual cells; RUSSO (204): breeding period; AURIVILLIUS (21) p. 11: breeding period, habitat, parasites; LO BIANCO (147) p. 469. †*A. schlumbergeri* from Luc- and Lion-sur-Mer, differences from type, young with IBB; BIGOT (39) p. 67. *A. tuberculata*; BELL (32) p. 133.

Antedonidae, incl. *Antedon*, *Thiolliericr.*, *Eudiocr.*, *Promachocr.*, referred to *Flexibilia Pinnata*; BATHER (22) p. 923.

†*Aorocrinus*; BATHER (24) p. 122: vide *Coelocrinus*.

Apiocrinidae, referred to *Flexibilia Pinnata*; BATHER (22) p. 923.

†*Ascocystis* is a primitive Camerate, and has open food-grooves on tegmen; JAEKEL (129) p. 378.

Atelecrinidae, **n. fam.** of *Flexibilia Pinnata*; BATHER (22) p. 923.

†*Atelestocrinus*, anal area; BATHER (24) p. 36: vide *Botryocrinidae*.

†*Aulocrinus*, forked anal tube, ? due to commensal; BATHER (24) p. 121.

†*Austinocrinus*:—*A. erckerti* (p. 57, pl. ii). *A. radiatus*, **n. sp.**, Senonian, Daghestan (p. 58, pl. ii): ANTHULA (18).

†*Bactrocrinus*, vide *Palaeocrinidæ*.

Bathycrinidae, doubtfully referred to *Dendrocrinoidea*, incl. only *Bathycr.*; BATHER (22) p. 922.

†*Batocrinidae* W. & Sp. erected into suborder *Batocrinoidea* and divided into *Tanaocrinidae*, *Xenocrinidae*, *Carpocrinidae*, *Barrandeocrinidae*, *Coelocrinidae*, *Batocrinidae* (s. str.), *Periechocrinidae*; BATHER (24) p. 121: *Batocrinidae*, incl. *Batocr.* and *Hyperocr.* (q.v.), fam. of *Batocrinoidea*; BATHER (22) p. 922, and (24) p. 121.

†*Batocrinoidea*, **sub-ord. nov.** of *Camerata monocyclica*, defined, incl. *Tanaocrinidae*, *Xenocrinidae*, *Carpocrinidae*, *Barrandeocrinidae*, *Coelocrinidae*, *Batocrinidae*, *Periechocrinidae*; BATHER (22) p. 922.

†*Batocrinus*, number of rami; *B. turbinatus* et var. *elegans*, locality of types: BATHER (24) p. 125.

†*Beyrichocrinus*, **n. g.**, with genotype *B. humilis*, **n. sp.**, Silurian f 2, Konieprus, Bohemia; WAAGEN & JAHN (246) p. 12, text-figg., pls. lix, lx.

†*Bohemicocrinus*, **n. g.**, with genotype *B. pulverens* [sic], **n. sp.**, Silurian, e 2 and black limestone, Kosor and Dvoretz, Bohemia; WAAGEN & JAHN (246) p. 15, text-figg., pls. lvii, lxi, lxii.

†*Botryocrinidae*, incl. *Botryocr.*, *Gothocr.*, *Mastigocr.*, *Gastrocr.*, *Rhadinocr.*, *Goniocr.*, *Atelestocr.*, *Streptocr.*, referred to *Dendrocrinoidea*; BATHER (22) p. 922.

Bourgueticrinidae, incl. *Bourgueticr.*, *Mesocr.*, *Rhizocr.*, referred to *Flexibilia Pinnata*; BATHER (22) p. 923.

†*Bourgueticrinus*?; TOULA (232) p. 67. *B. ellipticus*; DIBLEY (75); KLOOS (138): crystallography of columnals; CESARO (54) p. 99. [V. *Antedon* sp.]

†*Briarocrinus*, vide *Patelliocrinidae*.

†*Bursacrinus*, vide *Scaphiocrinidae*.

†*Cactocrinus* (p. 122); *C. obesus* (p. 125): BATHER (24).

Calamocrinus referred to *Apiocrinidae*; BATHER (22) p. 923. *C. diomedae*, anal tube and interbrachials; BATHER (24) p. 43, text-fig. 19.

†*Caleidocrinus*, **n. g.** (p. 106, text-figg. 27–32), with genotype *C. multiramus*, **n. sp.** (p. 113, pl. lxiii, text-figg. 27–30), also *C. barrandei*, **n. sp.** (p. 112, text-fig. 31), all Ordovician, d 4, near Zahorzan, Bohemia; WAAGEN & JAHN (246).

†*Calpiocrinus*, vide *Dactylocrinidae*. *C.? bohemicus*, **n. sp.**, Silurian, e 2 of

Vyskočilka near Klein-Kuchel, Bohemia; WAAGEN & JAHN (246) p. 20, pls. lix, lxxix.

†*Camerata*, criticism of Wachsmuth & Springer's conception, definition, and classification; BATHER (24) p. 118.

†*Camerata dicyclica*, **ord. nov.**, defined, incl. *Reteocrinidae*, *Dimerocrinidae*, *Lampterocrinidæ*, *Rhodocrinidae*; BATHER (22) p. 923.

†*Camerata monocyclica*, **ord. nov.**, defined, and divided into sub-orders *Melocrinoidea*, *Batocrinoidea*, and *Actinocrinoidea*, qq. v.; BATHER (22) p. 921.

†*Camptocrinus*, stem discussed; BATHER (24) p. 122.

†*Carabocrinidae* referred to *Cyathocrinoidea*; BATHER (22) p. 922.

†*Carolicrinus*, **n. g.**, with genotype *C. barrandei*, **n. sp.**, black limestone of Karlstein and e 2, Lochkov, Bohemia; WAAGEN & JAHN (246) p. 22, text-figg., pls. lviii, lxvi.

†*Carpocrinidae*, incl. *Carpocr.*, *Acacocr.*, *Desmidocr.*, *Macarocr.*, referred to *Batocrinoidea*; BATHER (22) p. 922.

†*Carpocrinus*, name preferred to *Habrocrinus* (q. v.); BATHER (24) p. 127.

†*Centriocrinus*, **nom. mut.**, pro *Centrocrinus* Wachsm. & Spr. non Austin nec Worthen, referred to *Patelliocrinidae*; BATHER (22) p. 922, and (24) p. 127.

†*Ceriocrinus* White non Desor nec König = *Delocr.* Miller & Gurley; BATHER (24) p. 32, vide etiam *Graphiocrinidae*. *C. monticulatus*, **n. sp.**, shales above Osage coal at Capital coal mine near Topeka, Kansas; BEEDE (30) Kansas quart. viii, p. 123, pl. xxxii. *C. nodulifera* [sic], n. sp., Upper Coal Measures, Kansas City, Mo.; BUTTS (50), Tr. Acad. Sci. Kansas, i, p. 13 and pl.

†*Cleiocrinus*, vide *Impinnata*.

†*Clidochirus*, vide *Ichthyocrinidae*.

†*Clonocrinidae*, **n. fam.**, incl. *Clonocr.* (q. v.), *Trybliocr.*, *Technocr.*; BATHER (22) p. 922.

†*Clonocrinus* Quenst. non Oehlert, precedes *Corymbocr.* Ang.; BATHER (22) p. 922, and (24) p. 127.

†*Coccocrininae*, sub-fam. of *Platycrinidae*, incl. *Coccocr.*, *Hapalocr.*, *Cordylocr.*; BATHER (22) p. 921.

†*Codiacrinidae*, incl. *Codiacr.* and *Lecythiocr.*, referred to *Cyathocrinoidea*; BATHER (22) p. 922.

†*Coeliocrinus*, vide *Scaphiocrinidae*. *C.*, sp. ind., "a mass of arms," Pilton beds, Barnstaple, Woodwardian Mus.; WHIDBORNE (250) p. 236, pl. xxxviii.

†*Coelocrinidae*, incl. *Coelocr.* (q. v.), *Dorycr.*, *Agaricocr.*, **n. fam.** of *Batocrinoidea*; BATHER (22) p. 922.

†*Coelocrinus* Meek & Worthen, antedates *Aorocrinus* W. & Sp.; BATHER (22) p. 922 and (24) p. 127.

†*Compsocrinus*, vide *Xenocrinidae*.

†*Cordylocrinus plumosus*; BATHER (24) p. 125.

†*Corymbocrinus* Ang., syn. of *Clonocr.* (q. v.); BATHER (24) p. 127.

†*Cosmocrinus*, **n. g.** of *Botryocrinidae*, to include *Poteriocrinus dilatatus* Schultze, *Cyathocrinus ornatissimus* Hall, and *C. holzapfeli*, **n. sp.**, Upper Devonian of Nehden; JAEKEL (128).

Crinoidea, defined, and divided into sub-classes *Monocyclica* and *Dicyclica* qq. v.; BATHER (22) p. 921.

†*Cromyocrinidae*, incl. *Cromyocr.*, *Eupachycr.*, *Agassizocr.*, *Tribrachiocr.*, *Phialocr.*, *Ulocr.*, referred to *Dendrocrinoidea*; BATHER (22) p. 922.

†*Crotalocrinidae*, referred to *Cyathocrinoidea*; BATHER (22) p. 922; not Camerata, but allied to *Gissocrinus*; JAEKEL (129) p. 382.

†*Crotalocrinus*; KAYSER & HOLZAPFEL (132) p. 507. *C. rugosus*; VENYUKOV (239) p. 94.

†*Ctenocrinus typus*, var. *intropunctata* nom. nud.; FUCHS (100) p. 57.

†*Culicocrinus* cf. *nodosus*; FUCHS (100) p. 57.
†*Cupellaecrinus*, see *Cypellocrinus*.
†*Cupressocrinidae*, referred to *Cyathocrinoidea*; BATHER (22) p. 922.
†*Cyathidium holopus*, colony, over 100 individuals bent in same direction; HENNIG (119) p. 116, text-fig. 21.
†*Cyathocrinidae*, incl. *Cyathocr.*, *Gissocr.*, *Lecythocr.*, referred to *Cyathocrinoidea*; BATHER (22) p. 922.
†*Cyathocrinoidea*, **sub-ord. nov.** defined, incl. *Carabocrinidae*, *Palaeocrinidae*, *Euspirocrinidae*, *Sphaerocrinidae*, *Cyathocrinidae*, *Petalocrinidae*, *Crotalocrinidae*, *Codiacrinidae*, *Cupressocrinidae*, *Gasterocomidae*: BATHER (22) p. 922.
†*Cyathocrinus*:—*C.*, sp. indet., columnals, Permo-carboniferous of Yarkalo, in Lant-san-kiang valley, China (p. 116, pl. iv), of Tali-schau in Yunnan, China (p. 123, pl. v), of Pu-pjao in Yunnan, China (p. 132, pl. vi), Upper Carboniferous, Teng-tjan-tsching near Kan-tschou-fu, China (p. 98, pl. iii); LÓCZY (149). *C.*, cf. *grebei*; FUCHS (100) p. 32. *C. longimanus*, anal area; BATHER (24) p. 35, text-fig. 15. *C. ornatissimus*, see *Cosmocrinus*.
†*Cypellocrininae*, sub-fam. of *Platycrinidae* for *Cypellocr.* q.v.; BATHER (22) p. 921.
†*Cypellocrinus* Shumard, resuscitated for *Marsupiocrinus* Phillips non Blainville [but *Cypellocr.* being preoccupied by Steininger, must yield to *Marsipocrinus* Bather, 1889]; BATHER (22) p. 921 and (24) p. 127.
†*Cyphocrinus gorbyi* Miller antedates *Hyptiocrinus typus* W. & Sp.; BATHER (24) p. 126.
†*Cyrtidocrinus*, vide *Ichthyocrinidae*.
†*Dactylocrinidae*, incl. *Dactylocr.*, *Calpiocr.*, *Lithocr.*, *Synerocr.*, *Euryocr.*, *Onychocr.*, **n. fam.** of *Flexibilia Impinnata*; BATHER (22) p. 923.
†*Dadocrinus*, vide *Pentacrinidae*.
†*Decadocrinus*, vide *Scytalecrinidae*.
†*Delocrinus*, name preferred to *Ceriocr.* (q.v.), anal area, analysis of cup; BATHER (24) pp. 32, 33, text-fig. 9.
†*Dendrocrinidae*, incl. *Dendrocr.*, *Merocr.*, *Ottawacr.*, *Homocr.*, *Thenarocr.*, referred to *Dendrocrinoidea*; BATHER (22) p. 922.
Dendrocrinoidea, **sub-ord. nov.** of *Dicyclica*, defined, incl. *Dendrocrinidae*, *Botryocrinidae*, *Lophocrinidae*, *Scaphiocrinidae*, *Scytalecrinidae*, *Graphiocrinidae*, *Cromyocrinidae*, *Encrinidae*, *Pentacrinidae*, *Uintacrinidae*, *Marsupitidae*, and (?) *Bathycrinidae*; BATHER (22) p. 922.
†*Dendrocrinus*:—*D. casei* and *D. longidactylus*, anal area; BATHER (24) p. 35, text-figg. 13 and 12.
†*Desmidocrinus*, vide *Carpocrinidae*.
†*Diabolocrinus*; BATHER (24) p. 122.
†*Diamenocrinus gonatodes*; FUCHS (100) pp. 6, 13, 22, 48, 91.
Dicyclica, **sub-class nov.**, defined, and divided into Orders Inadunata, Flexibilia, and Camerata, qq.v.; BATHER (22) p. 922.
†*Dimerocrinidae*, incl. *Dimerocr.*, *Ptychocr.*, *Orthocr.*, *Hyptiocr.*, referred to *Camerata Dicyclica*; BATHER (22) p. 923.
†*Dimerocrinus*, name preferred to *Thysanocr.*; BATHER (24) p. 126.
†*Dizyzocrinus*; BATHER (24) p. 122.
†*Dolatocrinus liratus*; BOWNOCKER (46) p. 20.
†*Dorycrinus?*, sp., spines; GRABAU (107) p. 143, fig. 24 *i*.
†*Ectenocrinus*, anal area; BATHER (24) pp. 36, 41.
†*Edriocrinus*, vide Impinnata.
†*Encrinidae*, incl. *Encr.*, *Stemmatocr.*, *Erisocr.*, referred to *Dendrocrinoidea*; BATHER (22) p. 922.
†*Encrinites**, a general term for undeterminable fragments other than

* Note to *Encrinites* and *Entrochus*. These are not intended as generic names,

columnals:—*E.* [err. pro *Entrochus*] sp., Ordovician, d 3 (p. 145, pl. lxxix); *E. anonymus*, Silurian, e 1, Tachlovic (pp. 134, 186, pl. lxx); *E.* [err. pro *Entrochus*] *artifex*, Ordovician, d 5 (p. 183, pl. lxxvii); *E. betula*, Silurian, e 2 (p. 155, pl. lxxvii); *E.* [err. pro *Entrochus*] *binarius*, Ordovician, d 2 (p. 144, pl. lxxix); *E.* [err. pro *Entrochus*] *fenestratus*, Ordovician, d 5 (pp. 143, 185, pl. lxxix); *E. gemmans*, Devonian, g 1 (p. 157, pl. lxxix); *E. inexplicatus*, Silurian, f 2, Konieprus (p. 132, pl. lix); *E. inflatus*, Devonian, g 1 (p. 158, pl. lxxix); *E. medullosus*, Silurian, e 1–2 and e 2 (pp. 158, 186, pls. lxx and lxxix); *E. nepos*, Silurian, e 2 (p. 152, pl. lxxvi); *E. nudus*, Devonian, g 2 (p. 156, pl. lxxix); *E.* [err. pro *Entrochus*] *petasus*, Ordovician, d 5 (p. 186, pl. lxxix); *E. praecursor*, Silurian, e 2 (p. 155, pl. lxxvii); *E. procerus*, Silurian, e 1–2, Dvoretz, etc. (pp. 135, 148, 187, pl. lxx); *E.* [err. pro *Entrochus*] *rotator*, Ordovician, d 4 (p. 144, pl. lxxix); *E. st. ivanensis*, Silurian, e 2 (p. 152, pl. lxxvi); *E. scopularum*, Silurian, e 2, Lodenic (p. 118, pl. lxxvii); *E. stringens*, Devonian, g 2 (p. 156, pl. lxxix); *E.* [err. pro *Entrochus*] *subpartitus*, Ordovician, d 3 (p. 145, pl. lxxix); *E. textus* [4 times] seu *tectus* [5 times], Silurian, e 1–2, Dvoretz and Karlstein (p. 132, pl. lxv); *E. turgidus*, Silurian, f 2 (p. 151, pl. lxxiv); *E. versatilis*, Devonian, h 1 (p. 156, pl. lxxix): all Bohemia; WAAGEN & JAHN (246).

†*Encrinus*:—*E.* nov. form. indet. (p. 10, pl. i); *E. granulosus* (p. 9, pl. i): TOMMASI (231). *E. liliiformis*, Mid. Trias of Tschung-tjen, China, columnals; LÓCZY (149) p. 160, pl. x: growth of arms; JACKSON (127) p. 128.

†*Entrochus**, general term for indeterminable columnals:—*E. anonymus*, Silurian, e 1 (p. 148, pl. lxx); *E. artifex*, Ordovician, d 5 (p. 140, pl. lxxvii); *E. bulbosus*, Silurian, f 2 (p. 146, pl. lx); *E. doctus*, Silurian, e 1–2 (p. 151, pl. lxxii); *E. laetus*, Ordovician, d 5 (p. 142, pl. lxxix); *E. margaritarum*, Silurian, e 1–2 (p. 149, pl. lxxi); *E. medullosus*, Silurian, e 1–2 (p. 148, pl. lxx); *E. milleporus*, Ordovician, d 5 (p. 142, pl. lxxvii); *E. nudulosus* [sic], Silurian, f 2 (p. 145, pl. lx); *E. nympharum*, Silurian, e 1–2 (p. 150, pl. lxxi); *E. placidus*, Silurian, e 1–2 (p. 149, pl. lxxi); *E. praecursor*, Ordovician, d 4, 5, and Silurian, e 2 (p. 141, pl. lxxvii); *E. primus*, Ordovician, d 1 (p. 182, pl. lxiii); *E. robustissimus*, Silurian, f 2 (p. 146, pl. lx); *E. runicus*, Silurian, e 1–2 (p. 150, pl. lxxii); *E. senior*, Silurian, e 1–2 (p. 148, pl. lxxi); *E. simplicior*, Silurian, e 1–2 (p. 147, pl. lxix): all Bohemia; WAAGEN & JAHN (246).

†*Erisocrinus*, vide *Encrinidae*. *E. megalobrachius*, **n. sp.**, Osage coal, Upper Coal Measures, Topeka, Kansas; BEEDE (30), Kansas quart. viii, p. 124, pl. xxxii. *E. toddanus*, **n. sp.**, Upper Coal Measures, Kansas City, Mo.; BUTTS (50) Tr. Acad. Sci. Kansas, i, p. 14 and pl.

†*Eudesicrinidae*, referred to *Flexibilia Pinnata*; BATHER (22) p. 923.

Eudiocrinus, vide *Antedonidae*.

†*Eugeniacrinidae*, referred to *Flexibilia Pinnata*; BATHER (22) p. 923.

†*Eupachycrinus*, vide *Cromyocrinidae*.

†*Euryocrinus*, vide *Dactylocrinidae*.

†*Euspirocrinidae*, referred to *Cyathocrinoidea*; BATHER (22) p. 922.

†*Eutrochocrinus*; BATHER (24) p. 122.

Flexibilia, **ord. nov.** of *Dicyclica*, defined, and divided into grades, *Pinnata* and *Impinnata*, qq.v.; BATHER (22) p. 922.

†'*Forbesiocrinus*' *agassizi*, referred to *Sagenocrinidae*; BATHER (22) p. 923.

F. nuntius, vide *Taxocrinus*.

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and the names indexed under them are not to be regarded as n. spp., since they are merely given by WAAGEN & JAHN as MS. names of BARRANDE, having no scientific validity.

†*Gasterocomidae*, incl. *Gasterocoma*, *Scolocr.*, *Achradocr.*, *Hypocr.*, referred to *Cyathocrinoidea*; BATHER (22) p. 922.
†*Gastrocrinus*, vide *Botryocrinidae*. *G. patulus?*; FUCHS (100) p. 52.
†*Gazacrinidae*, vide *Idiocrinidae*.
†*Gazacrinus inornatus* Miller antedates *Idiocr. elongatus*; BATHER (24) p. 126.
†*Gennaeocrinus*:—*G. eucharis*, plates; GRABAU (107) p. 142, fig. 24, and (108) p. 285. *G. nyssa*, plates, implicitly this name is preferred to *G. kentuckiensis*; GRABAU (107) p. 141 and fig. 23, see also (108) p. 285.
†*Gilbertsocr. dispansus* W. & Sp., syn. of *G. lyonanus* Miller; BATHER (24) p. 126.
†*Gissocrinus*, vide *Cyathocrinidae*.
†*Glyptocrinus decadactylus*, interradial and anal areas; BATHER (24) p. 32, text-fig. 1.
†*Gnorimocrinus*, defined by reference to *Taxocrinus expansus* Angelin as genotype, and referred to *Taxocrinidae*; BATHER (22) p. 923.
†*Goniocrinus*, vide *Botryocrinidae*.
†*Gothocrinus*, vide *Botryocrinidae*.
†*Graphiocrinidae*, incl. *Graphiocr.*, *Aesiocr.*, *Ceriocr.* White, referred to *Dendrocrinoidea*; BATHER (22) p. 922.
†*Habrocrinus* [nomen *Carpocrinus* preferendum est] *pentadactylus*, **n. sp.**, Moscow shale of Hamilton Group in W. New York; GRABAU (107) p. 143, fig. 25 [brachia vero non 'pentadactyla,' nec Carpocrini brachiis similia].
†*Hadrocrinus pentadactylus*, nom. nud.; GRABAU (108) p. 285.
†*Haplocrinus boitardi* Rouault [?nom. nov. et nud.] "désignée par Rouault [?sur les étiquettes] *Eugeniacrinites boitardi*," Devonian of Ille-et-Vilaine; KERFORNE (135) p. 344.
†*Herpetocrinus*; BATHER (22) p. 921, and (24) p. 122.
†*Heterocrinus*:—*H. bellevillensis*, anal area, analysis of cup (pp. 33, 41, text-fig. 5); *H. isodactylus* (?=*Ohiocr. compactus*), anal area (p. 41, text-fig. 17): BATHER (24).
†*Holocrinus*, vide *Pentacrinidae*.
Holopodidae, referred to *Flexibilia Pinnata*; BATHER (22) p. 923.
†*Homalocrinus*, vide *Taxocrinidae*.
†*Homocrinus*, vide *Dendrocrinidae*: anal area, analysis of cup; BATHER (24) p. 33, text-fig. 7.
†*Hybocrinus*, anal area, analysis of cup; BATHER (24) pp. 33, 44, text-fig. 6.
†*Hybocystis* Wetherby non Benson, referred to *Hybocrinidae*; BATHER (22) p. 921: anal; BATHER (24) p. 44.
†*Hyperocrinus* Meek & Worthen (as *Uperocr.*) precedes *Lobocr.* W. & Sp., referred to *Batocrinidae*; BATHER (22) p. 922, & (24) p. 126.
†*Hypocrinus*, vide *Gasterocomidae*.
†*Hyptiocrinus*, vide *Dimerocrinidæ*: is syn. of *Cyphocrinus*; BATHER (24) p. 126.
†*Ichthyocrinidae*, incl. *Ichthyocr.*, *Pycnosaccus*, *Lecanocr.*, *Cyrtidocr.*, *Clidochirus*, *Mespilocr.*, referred to *Flexibilia Impinnata*; BATHER (22) p. 923.
†*Ichthyocrinus*? sp. ind., Silurian, f. 2, Konieprus, Bohemia; WAAGEN & JAHN (246) p. 29, pls. lx, lxi.
†*Idiocrinidae* [melius *Gazacrinidae*] referred to *Flexibilia Impinnata* [probably in error]; BATHER (22) p. 923.
†*Idiocrinus* is syn. of *Gazacrinus* (p. 126), removed from *Thysanocrinidae* to ?*Flexibilia* (p. 120); *I. ventricosus* (p. 125): BATHER (24).
†*Impinnata*, grade of *Flexibilia*, incl. *Ichthyocrinidae*, *Idiocrinidae*, *Taxo-*

crinidae, *Dactylocrinidae*, *Sagenocrinidae*, also *Edriocr.*, *Cleiocr.*, and *Rhopalocr.*; BATHER (22) p. 923.

Inadunata dicyclica, **ord. nov.**, defined and divided into sub-orders *Cyathocrinoidea* and *Dendrocrinoidea*, qq. v.; BATHER (22) p. 922.

Inadunata monocyclica, **ord. nov.**, defined, incl. *Hybocrinidae*, *Stephanocrinidae*, *Heterocrinidae*, *Calceocrinidae*, *Pisocrinidae*, *Catillocrinidae*, *Zophocrinidae*, *Haplocrinidae*, *Allagecrinidae*, *Symbathocrinidae*, *Belemnocrinidae*, *Plicatocrinidae*, *Hyocrinidae*, *Saccocomidae*; BATHER (22) p. 921.

†*Iocrinus subcrassus*, anal area; BATHER (24) pp. 35, 42, text-fig. 11, 18.

Isocrinus accepted as the correct name for *Pentacrinus* Auctt. recentt. (p. 66); †*I. nicoleti*, colonies at Lion-sur-mer, persistence of IBB: BIGOT (39) pp. 66, 70. Vide etiam sub *Pentacrinus*.

†*Lampterocrinidae*, incl. *Lampterocr.* and *Siphonocr.*, **n. fam.** of *Camerata dicyclica*; BATHER (22) p. 923, & (24) p. 120.

†*Lampterocrinus*, brachia; BATHER (24) p. 125.

†*Laubeocrinus*, **n. g.** with genotype *L. barrandei*, **n. sp.**, Silurian, e 2, near Lochkov, Bohemia; WAAGEN & JAHN (246) p. 31, text-figg., pls. lix, lx.

†*Lecanocrinus*, vide *Ichthyocrinidae*.

†*Lecythiocrinus*, vide *Codiacrinidae*.

†*Lecythocrinus*, vide *Cyathocrinidae*.

†*Lithocrinus*, defined by reference to *Forbesiocrinus divaricatus* Angelin as genotype and referred to *Dactylocrinidae*; BATHER (22) p. 923.

†*Lobocrinus* W. & Sp. is syn. of *Hyperocrinus* (q. v.); BATHER (24) p. 126.

†*Lophocrinidae*, referred to *Dendrocrinoidea*; BATHER (22) p. 922.

†*Lyriocrinus*, basals; BATHER (24) p. 125,

†*Macarocrinus*, vide *Carpocrinidae*.

†*Macrocrinus*; BATHER (24) p. 122.

†*Macrostylocrinus*, vide *Patelliocrinidae*.

†*Mariocrinus*? *mundus*, **n. sp.**, Pilton beds of Croyde, Whidborne coll., and ? of Braunton, Barnstaple Athenæum; WHIDBORNE (250) p. 219, pls. xxxiv, xxxvii.

†*Marsipocrinus*, vide sub *Cypellocrinus*.

†*Marsupiocrinus*, vide sub *Cypellocrinus*.

†*Marsupites*, range in Yorkshire; LAMPLUGH (145) p. 31. *M. ornatus*; ANON (15 & 16); FRUCHT (99); KLOOS (138): in Algeria; PERON (189) p. 510; LAMBERT in review compares this with specimens from Luneburg rather than from Sussex.

†*Marsupitidae*, referred to *Dendrocrinoidea*; BATHER (22) p. 922.

†*Mastigocrinus*, vide *Botryocrinidæ*.

†*Melocrinidae* W. & Sp., erected into sub-order *Melocrinoidea* and divided into *Glyptocrinidae*, *Melocrinidae* (s. str.), *Patelliocrinidae*, *Clonocrinidae*, *Eucalyptocrinidae*, *Dolatocrinidae*; BATHER (24) p. 121.

†*Melocrinoidea*, **sub-ord. nov.** of *Camerata monocylica*, defined, incl. Famm. *Glyptocrinidae*, *Melocrinidae*, *Patelliocrinidae*, *Clonocrinidae*, *Eucalyptocrinidae*, *Dolatocrinidae*; BATHER (22) p. 922, and (24) p. 121.

†*Megistocrinus*:—*M.* (?), sp., Pilton beds, Barnstaple; WHIDBORNE (250) p. 218, pl. xxxvii. *M. spinulosus*; BOWNOCKER (46) p. 20.

†*Merocrinus*, vide *Dendrocrinidae*: anal area, analysis of cup; BATHER (24) p. 33, text-fig. 4.

†*Mesocrinus*, vide *Bourgueticrinidae*.

†*Mespilocrinus*, vide *Ichthyocrinidae*.

Metacrinus angulatus; HAECKEL (115) pl. xx. *M. rotundus*, growth of stem; JACKSON (127) p. 127.

†*Millericrinus horridus*; SEMENOV (212) p. 80.

†*Missouricrinus*, referred to *Belemnocrinidæ*; BATHER (22) p. 921.

Monocyclica, **sub-class. nov.**, incl. Orders *Inadunata*, *Adunata*, *Camerata*, qq. v.; BATHER (22) p. 921.

†*Myelodactylus*; BATHER (24) p. 122.
†*Myrtillocrinus*, vide etiam *Ancyrocrinus*.
†*Onychocrinus*, vide *Dactylocrinidae*.
†*Orthocrinus*, vide *Dimerocrinidae*.
†*Ottawacrinus*, vide *Dendrocrinidae*.
†*Palaeocrinidae*, incl. *Palaeocr.*, *Porocr.*, *Bactrocr.*, **n. fam.** of *Cyathocrinoidea*; BATHER (22) p. 922.
†*Parisocrinus*, vide *Sphaerocrinidae*: new diagram posterior side; BATHER (24) p. 35, text-fig. 16.
†*Patelliocrinidae*, incl. *Patelliocr.*, *Stelidiocr.*, *Macrostylocr.*, *Allocr.*, *Briarocr.*, *Centriocr.*, **n. fam.** of *Melocrinoidea*; BATHER (22) p. 922.
Pentacrinidae, incl. *Dadocr.*, *Holocr.*, and sub-fam. *Pentacrininae*, referred to *Dendrocrinoidea*; BATHER (22) p. 922.
Pentacrinus seu *Extracrinus*, vide etiam *Isocrinus*. †*P. annulatus*; LAMPLUGH (144) pp. 592, 599, 616. †*P. asteriscus*, incl. *P. whitei* Clark, Yellowstone Park; STANTON (221) p. 608. †*P. sp. ind. aff. carinatus*, columnals, Daghestan; ANTHULA (18) p. 57. *P.* (*Isocr.*) *decorus*, growth of stem; JACKSON (127) p. 127. †*P. legeri*, **n. sp.**, Upper Aptian of Ile Maïre near Marseilles, "Fragment d'un bras [*errore pro* tige] de Pentacrine composé de cinq articles" [at least 6, and possibly 11, are figured]; REPELIN (197) p. 364, pl. vii. *P.* (*Isocr.*) *maclearanus*; HAECKEL (115) pl. xx. †*P.* (*Isocr.*) *nicoleti*; SCHALCH (208) p. 733. †*P.* (*Isocr.*) *scalaris*; THOMPSON (229) p. 87. †*P.* (*Isocr.*) *stellatus*, at Castle Cove, Victoria; HALL & PRITCHARD (117) p. 50. †*P.* (*Extracr.*) *subangularis*; THOMPSON (229) p. 87. †*P.* (*Isocr.*) *tuberculatus*; THOMPSON (229) pp. 73, 87. *P.* (*Isocr.*) *wyville-thomsoni*; HAECKEL (115) pl. xx; ALBERT, Prince de MONACO (5) p. 313.
†*Periglyptocrinus*; BATHER (24) p. 122.
†*Petalocrinidae*, referred to *Cyathocrinoidea*; BATHER (22) p. 922.
†*Phialocrinus*, vide *Cromyocrinidae*.
†*Phimocrinus*, referred to *Symbathocrinidae*; BATHER (22) p. 921.
Pinnata, grade of *Flexibilia*, defined, incl. *Apiocrinidae*, *Bourgueticrinidae*, *Antedonidae*, *Atelecrinidae*, *Actinometridae*, *Thaumatocrinidae*, *Eugeniacrinidae*, *Holopodidae*, *Eudesicrinidae*; BATHER (22) p. 923.
†*Platycrinidae*, divided into subfamm. *Coccocrininae*, *Cypellocrininae*, and *Platycrininae*; BATHER (22) p. 921.
†*Platycrinus*:—*P.*? *anguliferus*, **n. sp.**, Pilton beds of Saunton, Swamy coll., of Top Orchard, Roborough, and Pilton, Porter coll., of Ashhill Quarry and Croyde, Whidborne coll.; WHIDBORNE (250) p. 223, pl. xxxvii. *P. eriensis*; GRABAU (107) p. 144. *P. symmetricus*; GIRTY (105) p. 515: growth of stem; JACKSON (127) p. 127.
†*Porocrinus*, vide *Palaeocrinidae*.
†*Poteriocrinus*, vide *Scaphiocrinidae*: discussion of Wachsmuth & Springer's action regarding this genus (p. 225); *P.* sp., Pilton beds, N. Devon (p. 228, pls. xxxv, xxxvi): WHIDBORNE (250). *P.* sp. indet. columnal, Permo-carboniferous of Tali-schau in Yunnan, China (p. 123, pl. v); of Young-tschang-fu in Yunnan, China (p. 129, pl. vi); LÓCZY (149). *P. barumensis* Whidb. (sub *Cyathocr.*), Pilton beds, Top Orchard and Barnstaple, Woodwardian Mus., Fremington, Partridge and Porter coll., now first descr. and figd.; WHIDBORNE (250) p. 227, pls. xxxiv, xxxv. *P. dilatatus* Schulze non Hall, vide *Cosmocrinus*. *P. tensus* Whidb., Pilton beds of Barnstaple, Woodwardian Mus. (type), of Saunton, Partridge coll., of Pilton, Porter coll., now first descr. and figd.; WHIDBORNE (250) p. 226, pls. xxxv, xxxviii.
Promachocrinus, vide *Antedonidæ*.
†*Ptychocrinus*, vide *Dimerocrinidæ*.
†*Pycnosaccus*, vide *Ichthyocrinidæ*.
†*Reteocrinidae* W. & Sp., heterogeneous, restr. to *Reteocr.* and referred to

Camerata dicyclica; BATHER (22) p. 923, & (24) pp. 119, 120: not a phyletic entity; JAEKEL (129) p. 382.

†*Rhadinocrinus*, vide *Botryocrinidæ*.

†*Rhaphanocrinus*, brachia, basals; BATHER (24) p. 125.

Rhizocrinus, vide *Bourgueticrinidae*. †*R. cornutus*; FUGGER (101) p. 393.

†*Rhodocrinidae*, referred to *Camerata dicyclica*; BATHER (22) p. 923.

†*Rhodocrinus*:—*R.*? sp. ind., Pilton beds of N. Devon; WHIDBORNE (250) p. 217, pl. xxxi. *R.*? *rectus* Hall (olim *Crinocystis*); WHITFIELD & HOVEY (254) p. 94.

†*Rhopalocrinus*, vide *Impinnata*.

†*Sagenocrinidae*, incl. *Sagenocr.* and 'Forbesiocr.' *Agassizi*, referred to *Flexibilia Impinnata*; BATHER (22) p. 923.

†*Scaphiocrinidæ*, incl. *Scaphiocr.*, *Poteriocr.*, *Woodocr.*, *Zeacr.*, *Coeliocr.*, *Bursacr.*, referred to *Dendrocrinoidea*; BATHER (22) p. 922.

†*Scaphiocrinus*:—*S.*? sp.; GIRTY (105) p. 516: Pilton beds of N. Devon; WHIDBORNE (250) p. 231, pl. xxxiv. *S. elegans*, anal area; BATHER (24) p. 35, text-fig. 14. *S.*? *inordinatus*, **n. sp.**, Pilton beds of Upcott Arch, Whidborne coll., and doubtful specimens from Barnstaple, Poleshill, and Braunton, first anal is in basal circlet (p. 230, pls. xxxiv, xxxv, xxxviii); *S.*? *plumifer*, **n. sp.**, Pilton beds of Barnstaple, Woodwardian Mus., of Braunton, Barnstaple Athenæum and Mus. Pract. Geol., of Pilton, Swamy coll. (p. 228, pls. xxxi, xxxiii, xxxvi, xxxviii); *S. salebrosus*, **n. sp.**, Pilton beds of Pilton, Porter coll., of Barnstaple, Woodwardian Mus., of Upcott, Barnstaple Athenæum, approaches *Cromyocrinus* (p. 232, pl. xxxvii); *S. transcisus*, **n. sp.**, Pilton beds of Barnstaple, Woodwardian Mus., of Pilton, Porter coll. (p. 230, pl. xxxviii): WHIDBORNE (250).

†*Scolocrinus*, vide *Gasterocomidae*.

†*Scyphocrinus*, general discussion and history of the genus and division into spp. and varr. (pp. 35–78, with text-figg.); *S.* sp.? various tegmina, plates and brachia (pp. 119–131, 134, 146, 186, pls. xlix, l, lii, lv, lxii, lxiv, lxv, lxvi, lxvii, lxviii, lxix, lxxi, lxxviii); *S.* sp. ind., numerous fragments, e 1–2, Bohemia (pp. 92–97, pls. xl, xli, xlvi, xlvii, xlviii, lii, lvi, lvii, lxii, lxiv); *S. decoratus*, **n. sp.**, Silurian, black limestone of Dvoretz, Bohemia (p. 88, pls. xl, xli, xlvii, text-fig. 25), and **var.**, ibid. (p. 91, pl. xli); *S. excavatus* (p. 80) cum **var. nov.** *Zenonis*, Dvoretz & Karlstein (p. 80, pls. xl, xliii), *aff. var. Zenonis* (p. 82, pl. xlv), **var. nov.** *Schlotheimi* Klein-Kuchel & Karlstein (p. 82, pls. xliv, xlvii, li, liii, lvii), **var. nov.** *typica*, Dvoretz, Karlstein, Mníšek (p. 84, pls. xlii, xlviii, li, liv), **var. nov.** *Schroeteri*, ibid. (p. 85, pls. xl, xlvi, li), all Silurian, black limestone e 1–2, Bohemia; *S. subornatus*, **n. sp.**, Silurian, black limestone of Karlstein and elsewhere, Bohemia (p. 78, pls. xl, xliv, lviii, lxii): WAAGEN & JAHN (246).

†*Scytalecrinidæ*, incl. *Scytalecr.*, *Decadocr.*, referred to *Dendrocrinoidea*; BATHER (22) p. 922.

†*Scytalecrinus* seu *Scytalocrinus*, reference of *Dactylocrinus* Sladen to this questioned (p. 233); *S. arachnoideus*, **n. sp.**, Pilton beds of Barnstaple, Woodwardian Mus. (p. 235, pl. xxxviii); *S. stadiodactylus* Whidb. (sub *Poteriocr.*) incl. *Poteriocr. batheri* Whidb., Pilton beds of Braunton and Roborough, Barnstaple Athenæum, of Barnstaple, Woodwardian Mus., of Pilton, Porter coll. (p. 233, pls. xxxvi, xxxvii): WHIDBORNE (250).

†*Siphonocrinus*; BATHER (24) p. 125.

†*Sphaerocrinidæ*, incl. *Sphaerocr.*, *Parisocr.*, referred to *Cyathocrinoidea*; BATHER (22) p. 922.

†*Spyridiocrinus* Oehl. syn of *Trybliocr.*; BATHER (24) p. 127.

†*Stelidiocrinus*, vide *Patelliocrinidae*.

†*Stemmatocrinus*, vide *Encrinidae*.

†*Stortingocrinus*, referred to *Symbathocrinidae*; BATHER (22) p. 921.
†*Streptocrinus*, vide *Botryocrinidae*.
†*Strophocrinus*, **n. g.**, with genotype *S. dicyclicus*, **n. sp.**, from Galena (=Trenton) series at St. Paul, Minn., described as "a Cystocrinoidean," is allied to *Carabocrinus*; SARDESON (207) Amer. Geol. xxiv.
†*Symbathocrinus*? sp. indet., Permo-carboniferous of Yarkalo, in Lantsan-Kiang valley, brachials only; LÓCZY (149) p. 117, pl. iv.
†*Synerocrinus*, vide *Dactylocrinidae*.
†*Tanaocrinidae*, referred to *Batocrinoidea*; BATHER (22) p. 922.
†*Tanaocrinus*, referred to *Batocrinoidea* as ancestor of *Carpocrinidae* in fam. *Tanocrinidae*; BATHER (24) p. 121.
†*Taxocrinidae* incl. *Taxocr.*, *Gnorimocr.*, *Anisocr.*, *Homalocr.*, referred to *Flexibilia Impinnata*; BATHER (22) p. 923.
†*Taxocrinus*:—*T.* sp.; GRABAU (108) p. 285. *T. macrodactylus*, redescr. from one of Phillips' cotypes and 8 other specimens; WHIDBORNE (250) p. 215, pl. xxxiii. *T. nuntius* (Hall, sub *Forbesiocr.*), cup and isolated arms; GRABAU (107) p. 145, fig. 27; [brachia vero non Taxocrini, Calpiocrini autem magis similia]. *T. stultus* Whidb., Pilton beds of Pilton and Poleshill in Porter coll., of Roborough in Barnstaple Athenæum, now first descr. and figd.; WHIDBORNE (250) p. 216, pl. xxxiv.
Thaumatocrinidæ, **n. fam.** of *Flexibilia Pinnata*; BATHER (22) p. 923.
Thaumatocrinus, anals; BATHER (24) pp. 37, 43.
†*Thenarocrinus*, vide *Dendrocrinidæ*.
†*Thiollericrinus*, vide *Antedonidæ*.
†*Thysanocrinidæ* W. & Sp., restricted; BATHER (24) p. 120.
†*Tribrachiocrinus*, vide *Cromyocrinidæ*.
†*Trybliocrinus* Geinitz antedates *Spyridiocrinus* Oehlert; BATHER (24) p. 127.
†*Uintacrinidæ*, referred to *Dendrocrinoidea*; BATHER (22) p. 922.
†*Uintacrinus socialis*, infrabasals in some specimens; SPRINGER (220): slab with 120 individuals; WOODWORTH (258) p. 5, pl.
†*Ulocrinus*, vide *Cromyocrinidae*. *U. blairi*, not *Ulocr.*, but between *Eupachycr.* and *Ulocr.*, diagr. of anal area (32); *U. buttsi* and *U. kansasensis*, anal areas (p. 33, text-fig. 3): BATHER (24).
†*Uperocrinus*, vide *Hyperocr.*
†*Vletavicrinus*, **n. g.** with genotype *V. haueri*, **n. sp.**, Silurian, black limestone, e 1–2, Dvoretz, Bohemia; WAAGEN & JAHN (246) p. 98, text-fig., pl. lxi.
†*Woodocrinus*, vide *Scaphiocrinidæ*.
†*Xenocrinidæ*, incl. *Xenocr.*, *Compsocr.*, *Abacocr.*, referred to *Batocrinoidea*; BATHER (22) p. 922.
†*Zeacrinus*, vide *Scaphiocrinidæ*: anal area, analysis of cup; BATHER (24) p. 33, text-fig. 8.
†*Zenkericrinus*, **n. g.**, with genotype *Z. melocrinoides*, **n. sp.**, Silurian, black limestone, e 1–2, Dvoretz, Bohemia; WAAGEN & JAHN (246) p. 102, text-fig., pl. xlii.

(G.)—†CYSTIDEA

(including EDRIOASTEROIDEA).

General account, *Cystidea*, defined and divided into Orders *Amphoridea*, *Rhombifera*, *Aporita*, and *Diploporita*; BATHER (22) pp. 919, 920; redefined (p. 63), and restricted by removal of *Thecoidea* (=*Edrioasteroidea*) and *Carpoidea* (=*Anomalocystida*), and synopsis of classifi-

† All extinct.

cation (p. 65) into *Dichoporita* and *Diploporita*, followed by detailed and exhaustive monograph; JAEKEL (130).

Edrioasteroidea, defined as Class, with Famm. *Agelacrinidae*, *Cyathocystidae*, *Edrioasteridae*; BATHER (22) p. 923. General principles of taxonomy of *Thecoidea* (= *Edrioasteroidea*) and division into *Thecocystidæ* and *Agelacrinidæ*; JAEKEL (130) p. 32.

Acanthalepis jamesi M'Coy = *Glyptocystis* [i.e. *Cheirocrinus*] cf. *pennigera*; REED (194) p. 762.

Acanthocystis referred to *Cladocrinoidea*; JAEKEL (130) p. 147.

Agelacrinidæ, redefined, incl. *Stromatocystis*, *Cystaster*, *Hemicystis*, *Agelacr.*, *Streptaster*, *Lepidodiscus*, *Haplocystis*, *Discocystis*, and referred to Class *Edrioasteroidea*; BATHER (22) p. 923: redefined and restr. to *Hemicystis* and *Agelacrinus*; JAEKEL (130) p. 47.

Agelacrinus (seu *-ites*), rediagnosed, incl. *Haplocystis*, *Lepidodiscus*, *Streptaster*; JAEKEL (130) p. 49. *A.* sp. of Mourlon 1881, believed to be same as *Protaster decheni*; DEWALQUE (73): = *Dinocystis barroisi* and not *Protaster decheni*; BATHER (23) p. 136. *A. blairi* (p. 51); *A. cincinnatiensis* (olim *Lepidodiscus*), rediagnosed (p. 50, pl. ii); *A. dicksoni*, rediagnosed (p. 50, pl. ii); *A. hamiltonensis*, rediagnosed (p. 51); *A. holbrooki* (p. 50); *A. lebouri*, rediagnosed, probably incl. *A. milleri* Sharman & Newton (p. 51, pl. i); *A. pileus*, rediagnosed (p. 50, pl. i, text-fig.); *A. rhenanus* (olim *Haplocystis*), rediagnosed (p. 50, pl. iii); *A. septembrachiatus*, 7 rayed individual of *A. cincinnatiensis* (p. 50); *A. squamosus*, rediagnosed (p. 51); *A. vorticellatus* (olim *Streptaster*), rediagnosed (p. 50): JAEKEL (130).

Allocystis (*-ites*), discussed, *A. hammelli*; JAEKEL (130) p. 398.

Amorphocystis, n. g. [but see Zool. Rec. 1897] (p. 337) with genotype *A. buchi*, **n. sp.** pro *Caryocystis testudinarius* Buch. non His., and *A. esthoniæ*, **n. sp.**, ? Ordovician drift, Esthland (p. 339); JAEKEL (130).

Amphoridea, redefined, incl. *Aristocystidae*, *Dendrocystidae*, *Anomalocystidae*; BATHER (22) p. 919.

Anomalocystidae, redefined; BATHER (22) p. 919.

Anomalocystis cornutus "probably a crustacean"; WHITFIELD & HOVEY (254) p. 97.

Apiocystinae, sub. fam. of *Callocystidae*, for *Meekocystis* and *Apiocystis*; JAEKEL (130) p. 277.

Apiocystis (*-ites*) Forbes 1848, name preferred to *Lepocrinus* Conrad, nom. nud. and *Lepadocrinus* Hall 1859, prioritatis causa [what about Mather 1843 ?], rediagnosed (p. 279); *A. angelini*, **n. sp.**, Silurian, Gotland (p. 282, pl. xiv); *A. canadensis* (p. 282); *A. elegans*, rediagnosed (p. 282); *A. gebhardi*, rediagnosed (p. 282, text-fig.); *A. huronensis* (p. 282); *A. oblongus* (olim *Pseudocrinus*), rediagnosed (p. 282); *A. pentrematoides*, rediagnosed (p. 282, pl. xv), *A. tecumseth* (p. 282): JAEKEL (130).

Aporita, redefined, incl. only *Cryptocrinidæ*; BATHER (22) p. 920.

Archegocystis, **n. g.** of *Sphaeronidæ* with genotype *Pyrocystis desideratus* Barr., incl. also *P. incertus* Barr., *P. patulus* Barr. and *Aristocystis bohemicus* Barr., pl. xxv, fig. 15 [but Barrande names this *Echinosphaerites infaustus*]; JAEKEL (130) p. 395, pl. iii.

Aristocystidæ, defined; BATHER (22) p. 919: redefined in sense different from both Haeckel and Bather, incl. *Aristocystis* and *Trematocystis*, morphology discussed; JAEKEL (130) p. 407.

Aristocystis (*-ites*), redefined and discussed (p. 411); *A. bohemicus*, rediagnosed, incl. *A.? grandiscutum* and *A.? rudis* (p. 412, pl. iii); *A. desideratus*, *A. idealis*, *A. potens*, and *A. sculptus*, are probably *Codiacystis* (p. 412); *A. subcylindricus* var. *bohemicus* is a *Codiacystis* (p. 412): JAEKEL (130).

Ascocystis, see IV, F.

Asteroblastus, rediagnosed, with syn. *Asterocystis* Haeck., and descr. (p. 383 text-fig.); *A. foveolatus*, rediagnosed with syn. *A. stellatus* Eichw. (p. 389, pl. vii); *A. sublaevis*, **n. sp.**, Lower Vaginatenkalk near St. Petersburg (p. 389, pl. xviii); *A. tuberculatus*, rediagnosed (p. 389, pl. vii, text-fig.); *A. volborthi*, rediagnosed (p. 389, pl. vii): JAEKEL (130). [V. sub IV, H]

Blastoidocrinus discussed as possible *Mesocystid*; JAEKEL (130) p. 389.

Calix, rediagnosed and discussed (p. 402); *C. halli*, doubtful (p. 404); *C. sedgewicki* [sic], probably incl. *C. barrandei* and *C. davidsoni* Rouault, *Echinosphærites murchisoni* Barr. and Vern. (p. 404, pl. iv): JAEKEL (130).

Callocystidae, redefined and discussed, with subfamm. *Glyptocystinae*, *Apiocystinae*, *Staurocystinae*, *Callocystinae*; JAEKEL (130) p. 266.

Callocystinae, subfam. of *Glyptocystidæ*; BATHER (22) p. 920: subfam. of *Callocystidæ* for *Hallicystis*, *Sphaerocystis*, and *Callocystis*; JAEKEL (130) p. 286.

Callocystis (*-ites*), rediagnosed, syn. *Anthocystis* Haeckel (p. 289); *C. jewetti* (p. 291, pl. xvi, text-fig.); *C. tripectinatus* (p. 291): JAEKEL (130).

Caryocrinidae, rediagnosed, and restr. to *Caryocrinus*, *Hemicosmites*, *Corylocr.*, *Juglandocr.*, *Stribalocystis*, morphology discussed; JAEKEL (130) p. 292.

Caryocrinus (*-ites*), rediagnosed; JAEKEL (130) p. 313. *Cariocrinus* [sic passim], relations to *Strophocr.* and *Crin.* generally; SARDESON (207) p. 270 et sqq. *C. ornatus*, rediagnosed, with syn. *C. loricatus* Say; *C. roemeri*, now first diagnosed; JAEKEL (130) p. 314, pl. xvii, text-fig.

Caryocystis (*-ites*), rediagnosed with synn. *Heliocr.* Eichw., *Orocystis* Barr., *Heliocystis* Haeck., et alia (p. 327); *C. aranea*, rediagnosed with synn. *Heliocr. radiatus* and ? *Caryocystis prominens* (p. 330, pl. ix); *C. balticus*, rediagnosed, probably incl. *C. davisi* and *C. granatum* of Forbes 1848 (p. 329, pl. ix); *C. burdigalensis*, **n. sp.**, Upper Ordovician, Bussaco near Coimbra, Portugal (p. 330); *C. confortatus* (olim *Echinosphaera*) rediagnosed with synn. *E. vexatus* and *E. quaerendus* Barr. (p. 330); *C. granatum*, rediagnosed (p. 329, pl. ix); *C. helmhackeri* Barr. (sub *Orocystis*) rediagnosed (p. 330, pls. ix, x) with **var. nov.** *thuringiae*, Upper Ordovician, Döschnitz, Thuringia (p. 330, pl. xiii): JAEKEL (130). *C. litchi*, vide sub *Eucystis*. *C. minutus* Forbes, intermediate between *Sphaeronis* and *Eucystis* (p. 407); *C. ovum* Schloth. (sub *Echinosphærites*) doubtfully maintained (p. 330); *C. piriformis* Forbes, intermediate between *Sphaeronis* and *Eucystis* (p. 407); *C. rouvillei*, rediagnosed (p. 330, pl. x): JAEKEL (130).

Cheirocrinus, vide *Chirocrinus*.

Chirocrinidæ, defined, incl. only *Chirocrinus*; JAEKEL (130) p. 212.

Chirocrinus distinguished from *Glyptocystis*, but incl. *Homocystis*, rediagnosed (p. 212); *C. alter*, rediagnosed (p. 221, pls. x, xi); *C. anatiformis* (p. 221); *C. atavus*, **n. sp.**, Vaginatenkalk, Pulkowa, St. Petersburg (p. 219); *C. degener*, **n. sp.**, Vaginatenkalk near Petersburg (p. 221); *C. forbesi*, rediagnosed (p. 221); *C. giganteus*, rediagnosed (p. 220, pl. xi); *C. granulatus*, **n. sp.**, Brandschiefer of Kuckers Esthland (p. 220, pl. xi); *C. insignis*, **n. sp.**, Vaginatenkalk, Wolchow (p. 221, pl. xviii); *C. interruptus*, **n. sp.**, Ordovician near Petersburg (p. 220, pl. x); *C. leuchtenbergi*, rediagnosed (p. 220); *C. logani*, rediagnosed, with var. *gracilis* (p. 220); *C. nodosus*, **n. sp.**, Middle Ordovician, *Ogygia* beds, Hovindsholm, Norway (p. 221, pl. x); *C. ornatus*, rediagnosed (p. 220); *C. penniger*, rediagnosed (p. 220, pl. ix, text-fig. 36): JAEKEL (130) vide etiam sub *Glyptocystis*. *C. radiatus*, **n. sp.**, Vaginatenkalk, N. of L. Ladoga (p. 220, pl. xviii, text-fig. 40); *C. sculptus*, rediagnosed (p. 221); *C. striatus*, **n. sp.**, Vaginatenkalk,

near Petersburg (p. 221, pl. xi); *C. volborthi*, rediagnosed (p. 220); *C. walcotti*, **n. sp.**, Trenton limest., Trenton Falls, U. S. (p. 221, pl. xi): JAEKEL (130).

Cigara dusli, is based on stem-fragments; JAEKEL (130) p. 147.

Codiacystis, **nom. nov.** pro *Craterina* Barr. non Bory, rediagnosed and discussed (p. 398); *C. sp. ind.*, Upper Ordovician, Frasno, Spain (p. 402); *C. bohemica* (p. 401, pl. iv): JAEKEL (130).

Comarocystidæ defined; BATHER (22) p. 920.

Corylocrinus, rediagnosed with synn. *Juglandocr.* Koenen, ? *Hemicosmites* Forbes and Salter non Buch, ? *Stribalocystis* Miller (p. 311); *C. crassus* olim *Juglandocr.* rediagnosed (p. 312); *C. elongatus*, **n. sp.**, Upper Ordovician of Grand Glanzy near Cabrières (p. 312, pl. xvii, text-fig.); ? *C. occidentalis*, **n. sp.**, single plates from Upper Ordovician of Bussaco, Portugal (p. 312); *C. pyriformis*, rediagnosed (p. 312): JAEKEL (130).

Crinocystis ? *rectus* referred with doubt to *Rhodocr.*; WHITFIELD & HOVEY (254) pp. 94, 99.

Cryptocrinidæ, defined; BATHER (22) p. 920.

Cyathocystidæ, **nov. fam.** pro *Cyathocystis*, defined and referred to Class *Edrioasteroidea*; BATHER (22) p. 923.

Cyathocystis, rediagnosed (p. 42); *C. plautinæ* (p. 43, pl. i); *C. rhizophora* (p. 43): JAEKEL (130).

Cyclocystoides, referred with doubt to *Agelacrinidæ*; BATHER (22) p. 923.

Cystaster, rediagnosed; JAEKEL (130) p. 43: vide *Agelacrinidæ*. *C. granulatus*, restr., part becomes *Thecocystis sacculus*; JAEKEL (130) p. 44, pl. i.

Cystidea concomitans not a *Stromatocystis* as Pompeckj thought, but a lobolith; JAEKEL (130) p. 147.

Cystoblastidæ, **n. fam.** for *Cystoblastus* only; JAEKEL (130) p. 222.

Cystoblastus, rediagnosed and described (p. 223); *C. koken*, **n. sp.**, Ordovician, C 2. Brandschiefer, Kuckers, Esthland (p. 230, pl. xvi, text-figg.); *C. leuchtenbergi*, rediagnosed (p. 230, pl. xvi): JAEKEL (130).

Dactylocystidæ, **n. fam.** pro *Dactylocystis* et *Protocrinus* [=*Protocrinidæ* Bather], morphology and phylogeny; JAEKEL (130) p. 425.

Dactylocystis, **n. g.** [syn. of *Proteroblastus* Jaekel 1895] (p. 434) with genotype *D. schmidti*, **n. sp.**, Middle Ordovician, *Hemicosmites* beds, Uxnorm near Reval, Esthland (p. 436, pl. v). *D. mickwitzi*, **n. sp.**, Middle Ordovician, Wesenberg beds, of Sack near Reval (p. 436, pl. v): JAEKEL (130).

Dendrocystidæ defined; BATHER (22) p. 919.

Dichoporita ord. nov. [but=*Rhombifera*] defined, general morphology discussed, divided into suborders *Regularia* and *Irregularia*; JAEKEL (130) p. 178 et sqq.

Dinocystis, n. g. with genotype *Dinocystis barroisi*, n. sp., Condroz, Ardennes [but already described by BATHER (16A) Zool. Rec. 1898]; JAEKEL (130) p. 47, pl. ii: not the same as *Agelacrinus* of Mourlon 1881; DEWALQUE (73): etymology, horizon, identity with *Agelacrinus* of Mourlon 1881; BATHER (23): vide *Edrioasteridæ*.

Diploporita, redefined, incl. *Sphaeronidae*, *Glyptosphæridae*, *Protocrinidae*, *Mesocystidae*, *Gomphocystidae*; BATHER (22) p. 920: redefined, general morphology discussed, contains famm. *Mesocystidae*, *Sphaeronidae*, *Aristocystidæ*, *Glyptosphaeridæ*, *Dactylocystidæ*, *Gomphocystidae*; JAEKEL (130) p. 346.

Discocystis, vide *Agelacrinidæ*. *D. kaskaskiensis*, *D. optatus*, *D. sampsoni*, discussed; JAEKEL (130) p. 47.

Echinodiscus Worth. and Mill. non Ag. vide *Discocystis*.

Echinoëncrininae, sub-fam. of *Glyptocystidae*: BATHER [illegible] 920.

Echinoëncrinus (*-ites*), rediagnosed and [illegible]

to other genera (p. 242); *E. angulosus*, rediagnosed, with **n. var.** *quadrata*, Vaginatenkalk near St. Petersburg, and **n. var.** *compta* ibid. (p. 248, pl. xiii); *E. laevigatus*, **n. sp.**, Ordovician, loc. ? (p. 248, pl. xiii); *E. lahuseni*, **n sp.**, Vaginatenkalk or Glauconitkalk, St. Petersburg (p. 247, pls. i, xiii, text-fig.); *E. reticulatus*, **n. sp.**, Vaginatenkalk, St. Petersburg (p. 248, pl. x); *E. senckenbergii*, rediagnosed, with syn. *Echinosphaerites granatum* Schloth. non Wahlb. and **var. nov.** *interlaevigata*, Vaginatenkalk near Petersburg (p. 248, pl. xiii): *E. striatus*, rediagnosed (p. 248): JAEKEL (130).

Echinosphaera (*-ites*), rediagnosed, with synn. *Deutocystis*, *Arachnocystis*, *Trinemacystis*, *Citrocystis* et alia, morphology; JAEKEL (130) p. 331. *E.* sp.; REED (194) pp. 732, 737. *E. aurantium*, rediagnosed with synn. *E. alcyonium* Schloth., *Sphaeromites citrus* His., and **var. nov.** *suecica*, Upper Orthoceras limest., Sweden (p. 336, pl. viii, text-figg.); *E. barrandei*, **n. sp.**, Upper Ordovician, Zahorzan, Bohemia, based on *E. infaustus* Barr. pars (p. 337); *E. belgicus*, **n. sp.**, Upper Ordovician, Gembloux (p. 337); *E. difformis*, **n. sp.**, Mid. Ordovician, c 3, Itfers bed near Jewe, Esthland (p. 336, pl. viii); *E. ferrigena* Barr. referred to *Glyptosphaera* (p. 425); *E. globosus*, **n. sp.**, Ordovician, Esthland (p. 336, pl. viii); **var. nov.** *anglica*, Mid. Ordovician, Ireland, type in Berlin Mus. (p. 337); *E. grandis*, **n. sp.**, Ordovician near Reval (p. 336): *E. granulata*?; REED (194) p. 723, rediagnosed (p. 337); *E. infaustus* Barr. rediagnosed (p. 337, pl. viii); Barrande, pl. xxv, f. 15 quoted erroneously as *Aristocystites bohemicus* and referred to *Archegocystis* (pp. 395, 412); *E. kloedeni*, **n. sp.**, based on *E.* ? *citrus* Kloeden non His., Mid. Ordovician in N. German Diluvium (p. 336); *E. pirum*, **n. sp.**, Mid. Ordovician, c 3, Itfer, Esthland (p. 336, pl. viii): JAEKEL (130).

Echinosphaeridæ, redefined; BATHER (22) p. 920: rediagnosed and restr. to *Echinosphaera*, *Caryocystis* (cum synn.) *Stichocystis*, *Amorphocystis*, morphology discussed, phylogeny; JAEKEL (130) p. 315.

Edrioaster, rediagnosed on evidence of E. Billings and unpublished notes and photographs of BATHER (p. 44); *E. bigsbyi* (p. 46, pl. ii); *E. buchianus* (p. 46, text-fig.): JAEKEL (130).

Edrioasteridae, **nov. fam.** pro *Edrioaster*, *Dinocystis*, defined and referred to Class *Edrioasteroidea*; BATHER (22) p. 923.

Eocystis Walcott, referred to Cladocrinoidea; JAEKEL (130) p. 147.

Erinocystis, **n. g.** of *Scoliocystidae* (p. 249) with *E. angulata* (p. 252), *E. sculpta* (p. 253) and *E. volborthi* (p. 253), **n. spp.**, all Ordovician of Esthland or St. Petersburg; JAEKEL (130) pl. xiii.

Eucystis, rediagnosed and discussed, incl. *Proteocystis* (p. 405); *E. flava* (Barr. as *Proteocystis*) redefined (p. 407, pl. iv); *E. hercynica*, **n. sp.**, Upper Lower Devonian of Sprakelsbach near Zorge, Harz (p. 407); ? *E. litschi* [sic] (Forbes, as *Caryocystis*) perhaps *Sphaeronis* or intermediate form (p. 406); *E. raripunctata*, redefined (p. 407, pl. iv): JAEKEL (130).

Fungocystis, syn. of *Protocrinus* (p. 430); *F. solitarius*, possibly syn. of *Protocr. rarissimus* (p. 434): JAEKEL (130).

Glaphyrocystis, **n. g.** of *Scoliocystidæ* (p. 253), with genotype *G. wohrmanni*, **n. sp.**, Upper Ordovician, F., Hohenholm, Esthland (p. 256 pl. x, and text fig.), and *G. compressa*, **n. sp.**, Upper Ordovician, F, Oddalem, Esthland (p. 257); JAEKEL (130).

Glyptocystidae, redefined, incl. *Echinoencrininae*, *Callocystinae*, *Glyptocystinae*; BATHER (22) p. 920.

Glyptocystinae, sub-fam. of *Glyptocystidae*; BATHER (22) p. 920: sub-fam. of *Callocystidae*, incl. only *Glyptocystis*; JAEKEL (130) p. 274.

Glyptocystites, Billings non Schmidt, rediagnosed (p. 275) with only one species. *G. multiporus*; JAEKEL (130) p. 277, pl. xv, text-figg. *G.*

[an *Cheirocrinus*] sp. (pp. 732, 763); *G.* cf. *pennigera* [*Cheirocrinus penniger*] (pp. 723, 744, 762): REED (194).

Glyptosphaera (*-ites*) redefined and discussed (p. 423); *G.*, **n. sp.**, Upper Ordovician of Frasno, Spain, no description or figure (p. 425); *G. ferrigena* (Barr. sub *Echinosphaera*) rediagnosed (p. 353, f. 80 and p. 425); *G. leuchtenberyi*, rediagnosed (p. 423, pl. iv); *G. mariae*, **n. sp.**, Ordovician in Drift [? of N. Germany], cotypes at Berlin (p. 118, f. 26 and p. 425): JAEKEL (130).

Glyptosphaeridae defined; BATHER (22) p. 920: redefined in sense different from Bernard but almost same as Bather, incl. only *Glyptosphaera*,—morphology; JAEKEL (130) p. 421.

Gomphocystidae, defined; BATHER (22) p. 920: redefined in sense different from both S. A. Miller and Bather, incl. *Gomphocystis* and *Pyrocystis*, morphology; JAEKEL (130) p. 414.

Gomphocystis (*-ites*), rediagnosed, date of name discussed, morphology (p. 419); *G. clavus*, syn. of *G. glans* (p. 421); *G. gotlandicus*, rediagnosed (p. 421, pl. ii); *G. glans*, rediagnosed (p. 421, pl. ii); *G. indianensis*, rediagnosed (p. 421); *G. tenax*, rediagnosed (p. 421): JAEKEL (130).

Hallicystis, **n. g.** with genotype *Apiocystis imago* Hall (p. 286). *H. imago*, rediagnosed (p. 288, pl. xv); *H. elongata*, **n. sp.**, Niagara limest., Chicago (p. 288 and text-fig. 62); JAEKEL (130).

Haplocystis, vide *Agelacrinidæ*.

Hemicosmites, v. Buch non Hall, rediagnosed; JAEKEL (130) p. 307. *H.* ? sp. indet., Ordovician, near Pu-pjao in Yunnan, China, hexagonal plates only, "viele Porencanäle in wirrer Stellung"; LÓCZY (149) p. 21, pl. vi, & p. 167, vide etiam *H. loczyi*. *H. extraneus*, rediagnosed (p. 310, text-fig.); *H. grandis*, **n. sp.**, Ordovician, F 2, Lyckholm beds, near Hapsal, Esthland (p. 310, text-fig.); *H. laevior*, **n. sp.**, Ordovician near St. Petersburg; based on admittedly abnormal specimen, with 7 infralaterals (p. 309); *H.? loczyi*, **n. sp.**, Upper Ordovician, China (p. 315): JAEKEL (130): no description but for further details, see LÓCZY (149). *H. malum*, rediagnosed (p. 309); *H. pocillum*, **n. sp.**, Mid. Ordovician (? Jewe beds) Esthland (p. 310); *H. pyriformis* Forbes non Buch, perhaps a *Chirocrinus* (p. 315); *H. pyriformis*, pathological individual [so exciting that diagnosis of sp. was forgotten] (pp. 296, 309, pl. xviii); *H. pulcherrimus*, **n. sp.**, Ordovician, D 3, Jewe beds, Sack near Reval (p. 310, pl. xviii); *H. rudis*, **n. sp.**, Mid. Ordovician (Jewe beds), Wassalem, Esthland (p. 310 text-fig.); *H.? rugatus* Forbes, Salter, discussed (p. 314); *H. squamosus* Forbes, discussed, belongs to no recognised genus of *Caryocrinidæ* (p. 314); *H. subglobosus* Hall is either a *Stribalocystis* or a *Callocystid* (p. 307); *H. tricornis*, **n. sp.**, Upper Ordovician, F 2, Borkholm beds, Nömmküll, Esthland (p. 310, pl. xviii); *H. verrucosus*, rediagnosed with ? syn. *H. porosus* Eichw. (p. 310): JAEKEL (130).

Hemicystis (*-ites*), rediagnosed; JAEKEL (130) p. 49, vide etiam sub *Agelacrinidæ*. *H. bellulus*, rediagnosed, incl. *Agelacr. latiusculus* (p. 49, pl. iii); *H. billingsi* (p. 49); *H. bohemicus*, rediagnosed, incl. *Agelacr. tener* (p. 49, pl. i); *H. confertus*, rediagnosed, incl. *Agelacr. velatus*, and *A. bohemicus* pars (p. 49); *H. parasiticus*, rediagnosed (p. 49); *H. simplex*, rediagnosed (p. 49); *H. stellatus*, rediagnosed (p. 49): JAEKEL (130).

Heterocystis armatus, position doubtful; JAEKEL (130) p. 345.

Holocystis (*-ites*) [= *Megacystis*] Hall non Lonsdale, referred to *Cladocrinoidea*, but the species described under that name by S. A. Miller are referred to *Trematocystis*; JAEKEL (130) p. 413.

Homocystis tertius Barr., see *Leptocystis*.

Irregularia, **sub-ord. nov.** of *Dichoporita*, incl. *Caryocrinidae*, *Echinosphaeridae*, *Tetracystidae*; JAEKEL (130) p. 291.

Juglandocrinus, see *Corylocrinus*.
Lapillocystis, is based on stem fragments; JAEKEL (130) p. 147.
Lepidodiscus, vide *Agelacrinidæ*.
Lepocrinites moorei made type of *Meekocystis* (q. v.); JAEKEL (130) p. 277.
Leptocystis, **n. g.** *Chirocrinidæ*, based on *Homocystis tertius* Barr.; JAEKEL (130) p. 222.
Lichenocrinus, compared with root of *Strophocr.*; SARDESON (207) p. 275.
Lichenoides is aberrant and ancient *Cladocrinoid*; JAEKEL (130) p. 147.
Lodanella mira Kayser, a Cystid allied to *Calix*; JAEKEL (130) p. 404.
Macrocystellidae, **n. fam.**, defined; BATHER (22) p. 920.
Malocystidae, **n. fam.**, defined; BATHER (22) p. 920.
Meekocystis, **n. g.**, with genotype *Lepocrinites moorei* [already type of *Lepadocystis* P. H. Carp.]; JAEKEL (130) p. 277, and text-fig.
Mesites [i.e. *Mesocystis*], ambulacra discussed; SOLLAS (216) p. 707.
Mesocystidae, **n. fam.**, defined; BATHER (22) p. 920: defined, incl. *Mesocystis*, *Asteroblastus*, and ?*Blastoidocr.* general discussion; JAEKEL (130) p. 372.
Mesocystis (olim *Mesites*), rediagnosed and described (p. 376); *M. pusyrewskii* (p. 383, pls. vi & xviii): JAEKEL (130).
Pilocystis primitivus, is a swollen root; JAEKEL (130) p. 147.
Pirocystis, see *Pyrocystis*.
Pleurocystidæ, redefined, includes only *Pleurocystis*; JAEKEL (130) p. 230.
Pleurocystis, rediagnosed and described (p. 231); *P. anglicus*, **n. sp.**, Upper Ordovician, ?Scotland, types in Riksmuseum, Stockholm (p. 235, pl. xii); *P. filitextus*, rediagnosed, with syn. *P. elegans* and var. *exornatus* (p. 234, pl. xii, text-fig.); *P. mercerensis*, rediagnosed (p. 235); *P. rugeri*, rediagnosed (p. 235); *P. squamosus*, rediagnosed, with syn. *P. robustus*, and var. *anticostiensis* (p. 234): JAEKEL (130).
Proteocystis flava; KAYSER & HOZAPFEL (132) p. 505, vide etiam sub *Eucystis*.
Protocrinidae, **n. fam.**, defined; BATHER (22) p. 920.
Protocrinus (*-ites*), rediagnosed and discussed, incl. *Fungocystis*, habitat, morphology (p. 430); *P. fragum*, rediagnosed (p. 433); *P. oviformis*, rediagnosed (p. 434, pl. v); *P. rarissimus* (Barr. sub *Fungocystis*) ?incl. *F. solitarius* Barr. (p. 434, pl. iii): JAEKEL (130).
Prunocystis (*-ites*), rediagnosed (p. 260); *P. baccatus* (olim *Echinoencrinus*), rediagnosed (p. 263); *P. fletscheri* [err. pro *fletcheri*], rediagnosed (p. 262): JAEKEL (130).
Pseudocrinus (*-ites*), rediagnosed (p. 283); *P. bifasciatus*, rediagnosed (p. 285, pl. xiv, text-fig.); *P. magnificus*, rediagnosed (p. 285, pl. xiv): JAEKEL (130).
Pyrocystis (*-ites*), redefined and discussed (p. 417); *P. desideratus*, referred to *Archegocystis* (p. 419); *P. incertus*, only indeterminable internal cast (p. 419); *P. patulus*, only indeterminable internal cast (p. 419); *P. pirum*, rediagnosed (p. 419, pl. iii): JAEKEL (130).
Regularia, **sub-ord. nov.** of *Dichoporita*, defined, and morphology discussed, incl. *Chirocrinidae*, *Cystoblastidae*, *Scoliocystidae*, *Pleurocystidae*, *Callocystidae*; JAEKEL (130) p. 193.
Rhombifera, redefined, incl. *Echinosphaeridae*, *Comarocystidae*, *Macrocystellidae*, *Tiaracrinidae*, *Malocystidae*, *Glyptocystidae*, *Caryocrinidae*; BATHER (22) p. 920.
Rhombifera Barr., rediagnosed (p. 340) and restr. to *R. bohemica* (p. 342, pl. x); *R. mira* is a *Stephanocr.* (p. 340): JAEKEL (130).
Schizocystis, now first diagnosed (p. 263); *S. armatus* (olim *Echinoencrinus*), redescribed (p. 266, pl. xii, text-fig.): JAEKEL (130).
Scoliocystidae, **n. fam.** for *Echinoëncrinus*, *Erinocystis*, *Scoliocystis*, *Glaphyrocystis*, *Prunocystis*, *Schizocystis*; JAEKEL (130) p. 235.

Scoliocystis, **n. g.** (p. 257), with genotype *Caryocystites pumilus* Eichw. (p. 260, pl. xi and text-fig.), and *S. thersites*, **n. sp.**, probably Vaginatenkalk, St Petersburg (p. 260, pl. xi, text-fig.); JAEKEL (130).

Sphaerocystis (*-ites*), rediagnosed (p. 288); *S. dolomiticus*, **n. sp.**, Niagara limestone, Chicago (p. 289, text-fig.); *S. multifasciatus*, rediagnosed (p. 289): JAEKEL (130).

Sphaeronidæ, defined; BATHER (22) p. 920: redefined and fully discussed; JAEKEL (130) p. 390.

Sphaeronis (*-ites*), rediagnosed, with synn. *Pomocystis*, *Pomosphaera* Haeckel, et alia (p. 396); *S. arachnoides* Forbes, referred to *Echinosphaera* (p. 337); *S. globulus*, rediagnosed (p. 398, pl. iv); *S. oblonga*, rediagnosed with synn. *S. minuta* and *S. uva* Ang. and ? *S. sulcifera* Ang. (p. 398); *S. pomum*, rediagnosed (p. 398); *S. stelluliferus* Salter, referred to *Echinosphaera* (p. 337): JAEKEL (130).

Staurocystinae, subfam. of *Callocystidae*, for *Pseudocrinus* and *Staurocystis*; JAEKEL (130) p. 282.

Staurocystis, rediagnosed (p. 285); *S. quadrifasciata* (olim *Pseudocrinus*) (p. 286, text-fig.): JAEKEL (130).

Stichocystis, **n. g.** (p. 325) with genotype *S. geometrica*, **n. sp.** [*sic*, but name is Angelin's, who figured it], Mid. Ordovician, Scandinavia; JAEKEL (130) p. 327, pl. ix.

Streptaster, vide *Agelacrinidæ*.

Stribalocystis (*-ites*), discussed (pp. 150, 312), *S. gorbyi* is perhaps a *Caryocrinus*, and *S. tumidus* a *Corylocr.* (p. 313); JAEKEL (130).

Stromatocystis (*-ites*), vide *Agelacrinidae*: rediagnosed and discussed (p. 36); *S. balticus*, **n. sp.**, Middle Cambrian of Baltic province (p. 42, pl. ii); *S. p.ntangularis*, redescr. (p. 42, pl. ii and text-figg.); JAEKEL (130).

Strophocrinus, Sardeson; see under IV F.

Tetracystidae, ? **n. fam.**, pro *Rhombifera* Barr. pars and *Tiaracrinus*; JAEKEL (130) p. 340.

Thecocystidae, **n. fam.** of *Thecoidea* (= *Edrioasteroidea*) incl. *Stromatocystis*, *Cyathocystis*, *Thecocystis*, *Dinocystis*, *Cystaster*, and *Edrioaster*; JAEKEL (130) p. 35.

Thecocystis, **n. g.** with genotype *T. sacculus*, **n. sp.**, Hudson River group, Cincinnati, Ohio (= *Cystaster granulatus* Hall, pars); JAEKEL (130) p. 43, pl. i.

Thecoidea, **nom. nov.** pro *Edrioasteroidea*, defined as Class of Echinoderma, and fully discussed; JAEKEL (130) p. 9.

Tiaracrinidae, defined; BATHER (22) p. 920.

Tiaracrinus, rediagnosed, with syn. *Staurosoma* Barr. non Will. (p. 343); *T. quadrifrons*, rediagnosed (p. 345); *T. rarus* Barr. (sub *Staurosoma*) rediagnosed (p. 345); *T. soyei*, redescr. with syn. *T. oehlerti* Schlueter (p. 345): JAEKEL (130).

Trematocystis, **n. g.** (p. 413) with genotype *T. subglobosus* Miller (as *Holocystites*) (p. 414, pl. iv); JAEKEL (130).

Trochocystis (*-ites*), single plate, Cambrian (Division 1 b) Long Id.; MATTHEW (171) p. 128.

(H.)—†BLASTOIDEA.

Index to all genera and species with synonyms and references, with list of all specimens in British Museum; BATHER (26).

Blastoidea, redefined, and divided into Grades *Protoblastoidea* and *Eublastoidea*, qq.v.; BATHER (22) p. 920.

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† All extinct.

Acentrotremites; BATHER (22) p. 921.
Asteroblastidæ, referred to *Blastoidea* under new grade *Protoblastoidea*; BATHER (22) p. 920.
Asteroblastus, vide sub IV, G.
Astrocrinus, vide *Zygocrinidae*.
Blastoidocrinus, referred to *Protoblastoidea*; BATHER (22) p. 920. [V. IV, G.]
Codaster seu *Codonaster*:—*C. conicus*, **n. sp.**, Pilton beds, Top Orchard, in Woodwardian Mus., compared with *C. hindii*; WHIDBORNE (250) p. 214, pl. xxix. *C. pyramidatus*; BOWNOCKER (46) pp. 16, 20, 21.
Codasteridae, redefined, incl. *Codaster*, *Phaenoschisma*, *Cryptoschisma*, *Orophocr.*; BATHER (22) p. 920.
Codonoblastida, a series of *Eublastoidea*, incl. *Codasteridae* and *Pentremitidae*; BATHER (22) p. 920.
Cryptoblastus; BATHER (22) p. 921.
Cryptoschisma; BATHER (22) p. 920.
Dimorphicrinus, validity of name discussed; BATHER (26) p. 10.
Eleutherocrinidae, **n. fam.** pro *Eleutherocr.*, defined; BATHER (22) p. 921.
Eublastoidea, defined, and divided into series: *Codonoblastida*, *Troostoblastida*, *Granatoblastida*, qq.v.; BATHER (22) p. 920.
Granatoblastida, a series of *Eublastoidea*, incl. *Nucleocrinidae*, *Orbitremitidae*, *Pentephyllidae* and *Zyyocrinidae*; BATHER (22) p. 921.
Granatocrinus, vide *Orbitremites*.
Heteroblastus; BATHER (22) p. 921.
Mesoblastus; BATHER (22) p. 921.
Metablastus; BATHER (22) p. 921.
Nucleocrinidae, redefined, incl. *Nucleocr.* and *Schizoblastus*; BATHER (22) p. 921.
Nucleocrinus verneuili; BOWNOCKER (46) pp. 16, 27, 33.
Orbitremites Austin, preferred to *Granatocrinus* (p. 23); *O. derbiensis*, locality discussed (p. 25): BATHER (26).
Orbitremitidae, redefined, incl. *Orbitremites*, *Cryptoblastus*, *Heteroblastus*, *Mesoblastus*, *Acentrotremites*; BATHER (22) p. 921.
Orophocrinus, referred to *Codasteridae*; BATHER (22) p. 920.
Pentephyllidae, **n. fam.** pro *Pentephyllum*, defined; BATHER (22) p. 921.
Pentremites godoni, Etheridge and Carpenter 1886, pl. i, f. 11, referred to *P. burlingtonensis*; BATHER (26) p. 40. *P. ovalis* Phillips non Goldf., see *Pentremitidea phillipsii*.
Pentremitidæ, redefined, incl. *Pentremites* and *Pentremitidea*; BATHER (22) p. 920.
Pentremitidea; BATHER (22) p. 920. *P. phillipsii*, **n. sp.**, Pilton beds of Strand near Ashford and Bradiford, in Barnstaple Athenæum, and of Wrafton Lane, in Whidborne Coll., also incl. *Pentremites ovalis* Phill. non Goldf.; WHIDBORNE (250) p. 212, pl. xxix.
Phaenoschisma; BATHER (22) p. 920.
Protoblastoidea, grade of *Blastoidea*, established for *Asteroblastidæ* and defined; BATHER (22) p. 920.
Schizoblastus; BATHER (22) p. 921.
Steganoblastus, referred to *Asteroblastidae* [erroneously]; BATHER (22) p. 920.
Tricoelocrinus; BATHER (22) p. 921.
Troostoblastida, a series of *Eublastoidea*, incl. *Troostocrinidae* and *Eleutherocrinidae*; BATHER (22) p. 921.
Troostocrinidae, redefined, incl. *Troostocr.*, *Metablastus*, *Tricoelocr.*; BATHER (22) p. 921.
Zygocrinidae, **n. fam.** pro *Zygocr.* [=*Astrocr.*], defined; BATHER (22) p. 921.

(K.)—INCERTAE SEDIS.

"Irregular pyriform bodies...between the *Pennatulæ* and the Crinoids," transition Middle to Upper Lias, Oxfordshire; WALFORD (147).

†*Bolboporites* sp.; REED (194) p. 732. *B. mitralis* and *B. stellaris* associated with *Chirocr. giganteus* and *C. volborthi* respectively, and thought to be some internal organ; WÖHRMANN quoted by JAEKEL (130) p. 216, footnote.

†"*Corona antiqua*" Barr. MS. "aucun reste de Crinoïde," Devonian g 1, Bohemia; WAAGEN & JAHN (246) p. 193.

†"*Encrinites laso*" Barr. MS., cirri, brachia, Worms or Plants, Silurian, e 2, Bohemia; WAAGEN & JAHN (246) p. 193, pl. lxxvii.

†"*Eucalyptocrinus ? bohemicus*" Barr. MS., probably impression of *Cyrtoceras corbulatum*, Silurian, e 1–2, Bohemia; WAAGEN & JAHN (246) p. 192, pls. lxii, lxxix.

XV. VERMES.

BY

ARTHUR WILLEY, D.Sc.

CONTENTS.

INTRODUCTION.

SPECIAL attention may be drawn to a few points in nomenclature. The written laws of priority have not yielded satisfactory results among the Cestoda where the confusion is very great indeed. In Oligochæta we have to signalise the disappearance of the well-known genus *Perichæta* [MICHAELSEN (254 etc.)] and in Trematoda the attempted dismemberment of the time-honoured genus *Distomum*. In regard to the latter an unfortunate overlapping has occurred in the case of LOOSS (213) and of LÜHE (216); the same generic name is applied to two different groups of species, and in several instances different generic names are applied to identical groups of species, though both works were issued precisely on the same date.

Of the monographic works which have appeared during the year the most important are the following:—GRAFF (152) Land planarians, ATTEMS (14) *Rhabdocœla* of Heligoland, BRETSCHER (63) *Oligochæta* of Switzerland, GRAF (151) Histology of Hirudinea, HILGENDORF (166) *Rotifera* of New Zealand, LUND (219) *Rotifera* of Denmark, LOOSS (213) *Trematoda* of Egypt, MAUPAS (244) Encystment of Nematoda, FAUVEL (121–124) *Arenicola*, LINSTOW (205) *Nematoda*, MICHAELSEN (255) *Oligochæta* terricola, BOVERI (50) Development of *Ascaris megalocephala*, ST JOSEPH (333) *Polychæta* of Brest, SSOLOWIEW (359) *Polychæta* of White Sea, STILES & HASSALL (361) Parasites of Fur Seal, VAULLEGEARD (382) *Tetrarhynchidæ*, CERFONTAINE (78) *Onchocotylinæ*, and a few others to be found in the list of titles given below.

I. TITLES.*

1. AIGRE, D. Sangsue dans le pharynx. Arch. parasit. ii, pp. 141 & 142.
   Cf. BLANCHARD (37).

2. ALBERT, PRINCE DE MONACO. Sur la distribution bathymétrique de certaines espèces d'animaux marins. Cinquantenaire Soc. Biol. Paris pp. 55 & 56.
   Bonellia viridis from 600 metres.

3. ALESSANDRINI, G. Sovra due casi di anormale espulsione di *Ascaris lumbricoides* Lin. Boll. Soc. Rom. Zool. viii, pp. 83 & 84.

4. ALLEN, E. J. On the fauna and bottom-deposits near the thirty-fathom line from the Eddystone Grounds to Start Point. J. Mar. Biol. Ass. vol. v, pp. 365–542.
   Vermes pp. 476–486 and p. 531, Chart x.

5. ANDRÉ, EMILE. Anomalie de l'appareil génital male chez la Sangsue. Rev. Suisse Zool. vi, pp. 427 & 428, 1 fig.

6. *ANON. Hygiène des mines. Discussion sur l'ankylostomasie, maladie parasitaire des mineurs. Comité central des houillères de France, Circulaire No. 1690, 4°, 8 pp., Belgium 1899.

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Cf. WHITMAN (395).

8. ARIOLA, V. Osservazioni sopra alcuni Dibotrii dei pesci. Atti Soc. Ligustica x, pp. 60–70, Tav. 4.

9. ——. Di alcuni Trematodi di pesci marini. T. c. pp. 129–138, Tav. i.

10. ——. Il gen. *Scyphocephalus* Rigg. e proposta di nuova classificazione dei Cestodi. T. c. pp. 160–167, with table.
Cf. LÜHE (217).

11. ——. Notizie sopra alcuni Botriocefali del Museo Universitario di Copenaghen. T. c. pp. 246–252, 4 figg.

12. ARMENDARIS, E. Un caso de triquinosis intestinal. Mem. Soc. Ant. Alzate xii, pp. 397–402.

13. ATHESTON, L. The epidermis of *Tubifex rivulorum* Lamarck, with especial reference to its nervous structures. Anat. Anz. xvi, pp. 497–509, 5 figg.

14. ATTEMS, C. G. Beitrag zur Kenntnis der rhabdocoelen Turbellarien Helgolands. Wiss. Meeresuntersuch. (N.F.) ii, 1897, pp. 219–232, Taf. ii.

15. AURIVILLIUS, C. Om hafsevertebraternas utvecklingstider och periodiciteten i larvformernas uppträdande vid Sveriges Vestkust. Bih. Svenska Ak. xxiv, Afd. iv, No. 4, 91 pp.

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40. ——. Nouveau cas de *Filaria loa*. T. c. pp. 504–534, 12 figg.

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42. ——. Courtes notices sur les Hirudinées. xxv. Sur la *Clepsine maculosa* Rathke, 1862. xxvi. Sur la *Clepsine polonica* Lindenfeld et Pietruszyński, 1890. xxvii. Sur les genres *Liostoma* Wagler et *Hæmenteria* de Filippi. xxviii. Sur le *Liostomum Ghilianii* (F. de Filippi, 1849). Bull. Soc. zool. France xxiv, pp. 181–189.

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Pontodrilus ephippiger Rosa, var. *laysanianus*, n. var., p. 217, *matsushimensis* Iizuka, var. *chathamianus*, n. var., p. 220; MICHAELSEN (257).
P. matsushimensis Iizuka; BEDDARD (23).
Trichochæta hesperidum Bedd. Supplementary description; BEDDARD & FEDARB (25).
Tritogenia sulcata Kinbg., *Geoscolecidæ*, p. 415; MICHAELSEN (254).
Vermiculus limosus, n. sp., p. 248, *glotini*, n. sp., p. 250; FERRONIÈRE (126).
Yagansia, n. g., *Megascolecidæ*, type *Y. spatulifer* Mchlsn., p. 237; MICHAELSEN (257).
Y. kinbergi, n. sp., Kafferland, p. 443; MICHAELSEN (254).

HIRUDINEA.

GENERAL BIOLOGY.

Anatomy of *Ichthyobdellidæ*; E. JOHANSSON (177): of Australian land leeches; LAMBERT (196).

Circulation in *Hirudo medicinalis*; GOODRICH (148): structure of heart in *Hæmentaria costata*; KOWALEVSKY (185).

Cœlom and Hæmocœl in *Hirudo medicinalis*; GOODRICH (148).

Copulation. Hypodermic injection in *Nephelis*; BRANDES (52): in *Hæmentaria costata* and *Piscicola*; KOWALEVSKY (185–187): throughout the group; BRUMPT (64).

Economics. *Piscicola piscium*; PLEHN (302).

Excretion. Anatomy, histology and physiology of the nephridia: excretophores: origin of pigmentation and external markings: the cumulative effect of the migration of the excretophores; GRAF (151).

Histology of skin; LEYDIG (201); BAYER (22); structure of protoplasm in epithelial cells; BOLSIUS (44): ciliated organs in *Hæmentaria officinalis*; BOLSIUS (45): excretory system; GRAF (151): nucleolar structures in *Piscicola*; MONTGOMERY (266): intracellular cilia in visual cells; PRENANT (306): male generative organs; SCHUBERG (339).

Metamerism; APÁTHY (7); WHITMAN (395).

Parasitology. Leeches in the pharynx; AIGRE (1); BLANCHARD (37): Gregarines in intestine of *Glossiphonia sexoculata*; BOLSIUS (46): destruction of *Piscicola piscium*; PHLEN (302).

Physiology. Acceleration and inhibition of automatic movements; POMPILIAN (305).

Pigmentation; GRAF (151).

Psychological manifestations of *Clepsine;* WHITMAN (396): pain-sensations in the leech; NORMAN (283).

Rheotropism of *Nephelis*; DEWITZ (112).

Teratology. Anomaly of the male genital apparatus in *Hirudo medicinalis*; ANDRÉ (5).

SYSTEMATIC.

Centropygus Grube & Oerst. 1859 = *Cylicobdella* Grube, 1871 = *Liostomum* R. Bl. 1896 non Wagler, 1831. [*Herpobdellidæ*, 2 species]; BLANCHARD (42).

Clepsine maculosa Rathke, 1862 = *Hemiclepsis tessellata* (O. F. Müller, 1774), *polonica* Lind. et Pietrusz. 1890 = *Glossosiphonia heteroclita* (L. 1758); BLANCHARD (42).

Clepsine nepheloidea, n. sp., Whitm. (no diagnosis), *hollensis*, n. sp., Whitm. Taf. xiii, fig. 110, *phalera*, n. sp., Whitm. Taf. xiv, figg. 116 & 117, *Clepsine a*, n. sp., Whitm. Taf. xv, fig. 121, *Clepsine b*, n. sp., Whitm. Taf. xiii, fig. 114; GRAF (151).

Geobdella whitmani, n. sp., p. 157, *australiensis*, n. sp., p. 158, Australian land leeches; LAMBERT (196).

†*Hirudella laticauda*, formerly described as a fossil Annelid, now shown to be a leaflet of a Cycad, probably of the genus *Pterophyllum*; BASSANI (20).

Limnatis nilotica (Sav.); BLANCHARD (37).

Liostomum Wagler, 1831 = *Hæmenteria* de Fil. 1849 = *Blennobdella* Ém. Blanch. 1849 = *Hybobdella* Weyenb. 1877. [*Glossosiphonidæ*, 2 species]; BLANCHARD (42).

L. ghilianii (de Filippi) = *Hæmenteria ghilianii* de Filippi; BLANCHARD (42).

Nephelis quadrostriata, Taf. xiii, figg. 111 & 112; GRAF (151).

Torix mirus R. Bl., parasitic in a Tonkinese *Melania*; BLANCHARD (43).

PLATHELMINTHES.

NEMERTINA.

GENERAL BIOLOGY.

Breeding periods (see also under *Vermes*); COE (86).

Development, *Pilidium*; COE (88).

Experimental Cytology. Action of salt-solutions on eggs of *Cerebratulus lacteus*; MORGAN (275), pp. 503–511.

Fission and Regeneration in *Cerebratulus*; C. B. WILSON, Science ix, p. 365.

Maturation and Fertilisation in *Cerebratulus*; COE (87).

DISTRIBUTION.

Alaska; GRIFFIN (155).

Antarctic *Nemertina*, list and short account of upwards of 30 species; BÜRGER (66).

Pacific. *Planktonemertes*, a deep sea Pelagonemertid; WOODWORTH (407).

Puget Sound; GRIFFIN (155).

SYSTEMATIC.

Amphiporus imparispinosus, p. 210, *formidabilis*, p. 211, *brunneus*, p. 212 n. spp. from Port Townsend, *angulatus* (Fabr.), p. 212, from Alaska *drepanophoroides*, n. sp., p. 214; GRIFFIN (155).

Carinella sexlineata, p. 201, *rubra*, p. 203, n. spp.; GRIFFIN (155).

Carinoma mutabilis, n. sp., p. 204, var. *argillina* n. var., p. 205, var. *vasculosa* n. var., p. 206, synopsis of species of *C.*, p. 206; GRIFFIN (155).

Emplectonema viride Stimpson, p. 207, *violaceum* (Bürger), p. 209; GRIFFIN (155).

Lineus striatus, n. sp., p. 214, Kilisut Harbour; GRIFFIN (155).

Planktonemertes, n. g. (*Pelagonemertidæ*) for *P. agassizii*, n. sp., trawled from deep water in the Pacific; WOODWORTH (407).

TURBELLARIA.

GENERAL BIOLOGY.

Acœlous condition of *Convoluta*, secondary, and due to regression from ancestors possessing a digestive canal and a less rudimentary organisation; GEORGÉVITCH (145).

Anatomy of *Haplodiscus ussowi* Sabussow, from Messina; MONTICELLI (271).

Anatomy and Histology of *Geoplana steenstrupi*; KRSMANOVIĆ (190).

Development of *Convoluta roscoffensis*; GEORGÉVITCH (144 & 145); *Eustylochus ellipticus* and *Planocera nebulosa*; VAN NAME (379).

Embryology of Summer and Winter eggs of freshwater *Rhabdocœla*; BRESSLAU (62).

Heteromorphosis, Regeneration and Polarity, in *Planaria*; VOIGT (384), MONTI (267), FUHRMANNN (137), DRIESCH (119, p. 54).

Maturation and Fertilization in *Polychærus caudatus* Mark.; GARDINER (143).

Monograph. *Tricladida terricola* (Land planarians), External morphology, pp. 11–37, Anatomy and Physiology, pp. 38–244, Regeneration and Fission, pp. 241–244, Œcology, pp. 245–252, Chorology, pp. 253–279 and 562–567, Taxonomy, pp. 280–561; GRAFF (152).

Pigmentation. Red and Blue Pigment of *Rhynchodemus*; LIVERSIDGE (208).

Teratology. Cytological anomalies in *Thysanozoon*; VAN DER STRICHT (377).

DISTRIBUTION.

Geographical distribution of *Tricladida terricola*: GRAFF (152).

Chatham Islands. *Leptoplana californica*; P

Heligoland. *Rhabdocœla*; ATTEMS (14).

Lorraine; *Macrostoma hystrix* Oerst. abundant in salt-marshes, p. 269; FLORENTIN (127).

Punta Arenas. *Tricladida*; BERGENDAL (32).

Switzerland. *Planaria gonocephala*, *Polycelis cornuta* and *P. alpina*; VOLZ (385).

Tasmania. *Microcelis schauinslandi*; PLEHN (301).

White Sea. *Böhmigia maris-albi*; SABUSSOW (331).

SYSTEMATIC.

GRAFF's monograph (152) of Land Planaria includes numerous new species; of these we here mention only the names.

Acrorhynchus heinckei, n. sp., Heligoland, p. 225 (*Rhabdocœla*); ATTEMS (14).

Alaurina alba, n. sp., p. 221, Heligoland (*Rhabdocœla*); ATTEMS (14).

Amblyplana teres, p. 507, *notabilis*, *zenkeri*, *knysnensis*, *mahéensis*, *fuliginea*, *cockerelli*, *ehrenbergi*, *capensis*, *braueri*, *haeckeli*; GRAFF (152), n. spp.

Artiocotylus speciosus, p. 481; GRAFF (152), n. sp.

Artioposthia grubei, p. 406, *castanea*; GRAFF (152), n. spp.

Bipalium haberlandti, p. 418, *shipleyi*, *gulliveri*, *floweri*, *wrighti*, *smithi*, *piceum*, *falcatum*, *simplex*, *steindachneri*, *adensameri*, *negritorum*, *claparèdei*, *madagascarense*, *kirkpatricki*, *ocellatum*, *robiginosum*, *lehnerti*, *wiesneri*, *haasei*, *ferrugineum*, *superbum*, *strubelli*, *lomani*, *jansei*, *salvini*, *layardi*, *voigti*, *tripartitum*, *catenatum*, *solmsi*, *kelleri*, *woodworthi*, *hildebrandi*, *girardi*, *fenestratum*, *interruptum*, *ellioti*, *ranchi*, *ridleyi*; GRAFF (152), n. spp.

Böhmigia n. g. *maris-albi*, n. sp., White Sea (*Acœla*); SABUSSOW (331).

Cœradoplana jheringi, p. 395, *ehrenreichi*, *spatulata*; GRAFF (152), n. spp.

Cotyloplana dugèsi, p. 479, *diesingi*, *sharpi*; GRAFF (152), n. spp.

Dolichoplana feildeni, p. 533, *tristis*, *signata*, *harmeri*, *conradti*, *vœltzkowi*, *bosci*, *procera*, *picta*; GRAFF (152), n. spp.

Geoplana argus, p. 296, *ladislavii*, *applanata*, *polyophthalma*, *braunsi*, *goeldii*, *gollmeri*, *albopunctata*, *sagittata*, *platei*, *stolli*, *férussaci*, *cruciata*, *distincta*, *blanchardi*, *reticulata*, *lata*, *œrstedi*, *metzi*, *modesta*, *halbani*, *bergi*, *ehlersi*, *bogotensis*, *tænioides*, *fryi*, *gigantea*, *multicolor*, *splendida*, *rostrata*, *sexstriata*, *pardalina*, *collini*, *chilensis*, *bohlsi*, *nobilis*, *perspicillata*, *micholitzi*, *korotneffi*, *assimilis*, *canaliculata*, *kenneli*, *pelewensis*, *leuckarti*, *pulverulenta*, *huttoni*, *sowerbyi*, *metschnikoffi*, *dæmeli*, *krausi*, *challengeri*, *gamblei*, *balfouri*, *meridionalis*, *warragulensis*, *sieboldi*, *bicolor*, *mœbiusi*; GRAFF (152), n. spp.

G. steenstrupi; KRSMANOVIĆ (190), n. sp.

Gunda ohlini, *segmentatoides*, Punta Arenas; BERGENDAL (32), n. spp.

Gyrator helgolandicus, p. 226 (*Rhabdocœla*); ATTEMS (14), n. sp.

Hyporhynchus intermedius, p. 228 (*Rhabdocœla*); ATTEMS (14), n. sp.

Leptoplana californica Plehn, from Chatham Islds., fig. B; PLEHN (301).

Microcelis n. g. *schauinslandi*, n. sp. (*Leptoplanidæ*), Tasmania; PLEHN (301).

Nematodemus lumbricoides, p. 513; GRAFF (152), n. sp.

Paramesostoma n. g. for *P. neapolitanum* (*Mesostoma neapolitanum* Graff), p. 223; ATTEMS (14).

Pelmatoplana moluccana, p. 387, *trimeni*, *sarasinorum*, *ijimai*, *humberti*, *bogoriensis*, *treubi*, *greeni*, *inflata*, *martensi*, *blomefieldi*, *guentheri*, *buettneri*; GRAFF (152), n. spp.

Perocephalus sikorai, p. 414, *hilgendorfi*, *tamatavensis*, *ravenalæ*; GRAFF (152), n. spp.

Placocephalus mollis, p. 470, *murinus*, *richtersi*, *virchowi*, *bergendali*, *bleekeri*, *semperi*; GRAFF (152), n. spp.

Planaria sp. inq. from Punta Arenas; BERGENDAL (32).

Platydemus conspersus, p. 518, *kraepelini*, *luteicollis*, *miniatus*, *tabatteldili*, *macrophthalmus*, *insularis*, *africanus*, *boholicus*, *atropurpureus*, *lividus*, *septemstriatus*, *lineolatus*, *bivittatus*, *leidyi*, *albicinctus*; GRAFF (152), n. spp.

Rhynchodemus scharffi, p. 487, *ochroleucus*, *vejdovskyi*, *putzei*, *albicollis*, *nolli*, *cultratus*, *blainvillei*, *figdori*, *lubbocki*, *ceylonicus*, *varians*, *amboinensis*, *rubrocinctus*, *hallezi*, *excavatus*, *pellucidus*, *demani*, *schmardai*, *belli*, *michaelseni*, *bæhmigi*, *chuni*; GRAFF (152), n. spp.

CESTODA.

GENERAL BIOLOGY.

Monograph of *Tetrarhynchidæ*. Anatomy, Histology, Bionomics, Phylogeny; VAULLEGEARD (382).

Adhesion to intestinal wall; MINGAZZINI (260 & 261).

Anatomy. *Bertia edulis* and *sarasinorum*: both from *Phalanger ursinus* of Celebes; ZSCHOKKE (418).

Classification based on number of bothria: (1) *Dibothria*, (2) *Tribothria*, (3) *Tetrabothria*, (4) *Octobothria*; ARIOLA (10) criticised by LÜHE (217): on the character of the Cystic Phase; VILLOT (383).

Development of *Ophryocotyle proteus* Friis; VILLOT (383).

Hydatid cyst in the liver; THÉBAULT (369).

Larvæ.—*Tetrarhynchus bisulcatus* Linton.: Larva lives in the intestinal walls of *Sepia officinalis* L. and is the *T. megabothrius* of Rudolphi; it also occurs in *Octopus vulgaris*, *Trigla gurnardus*, and *Conger vulgaris*, pp. 209–233: *T. lingualis* Cuvier: Larva in *Solea vulgaris*, pp. 234–239: *T. ruficollis* Eisenhardt from *Mustelus vulgaris*, larva in Crustacea, pp. 309–321: *T. tetrabothrius* Van Ben. from *Acanthias vulgaris*, pp. 256–262, pl. xii; VAULLEGEARD (382).

Rhynchodæal Glands of *Tetrarhynchidæ*; PINTNER (298).

Teratology. *Cœnurus serialis*; RAILLIET (310): bifurcated specimen of *Ligula monogramma*; BRANDES (51): *Moniezia benedeni* with 3 suckers on scolex; NEUMANN (280): abnormal segments in *Tænia saginata*; NEUMANN (280): spiral segmentation in the same; BRANDES (51): Trihedral monsters of *Tænia saginata*; CATTAERT (70).

Toxicology. Poisonous effects; NUTTALL (285): Bactericidal action of extract of *Tænia inermis*; PICOU et RAMOND (296).

DISTRIBUTION.

Acipenser ruthenus, new host for *Bothriocephalus punctatus* Rud.; VOLZ (387).

Aves. Cestodes of *Corvidæ*; VOLZ (388): enumeration of 20 species of *Davainea* parasitic in birds; BLANCHARD (39): species of *Prosthecocotyle*, FUHRMANN (138): *Acoleinæ*; FUHRMANN (133): *Hymenolepis tetraonis*; WOLFFHÜGEL (405).

Marsupialia. *Anoplocephalinæ*; ZSCHOKKE (417).

Pisces. *Bothriocephalidæ*; ARIOLA (8 & 11); LÜHE (215 & 218); STOSSICH (362 & 366).

Placentalia. Enumeration of 5 species of *Davainea*; BLANCHARD (39).

SYSTEMATIC.

Abothrium fragile (Rud.) = *Both*
LÜHE (215).

Acoleinæ nov. fam. to include *Gyrocœlia* n. g. *Acoleus* n. g. and *Tænia polymorpha* Rud.; FUHRMANN (133).

Acoleus n. g. *armatus*, n. sp., from *Himantopus autumnalis* and *Limosa rufa*; FUHRMANN (133 & 134).

Amabilia lamelligera (Owen); DIAMARE (115), COHN (95).

Amœbotænia n. g., p. 421, for *A. sphenoides* (Rud.) and *A. ischnorhyncha* (Lühe); COHN (94).

Anchistrocephalus imbricatus (Dies) = *Dibothrium imbricatum* Dies, pp. 711 & 712; LÜHE (215).

Bothridium Blainv. = *Solenophorus* Crepl., p. 49 [*Dibothriocephalinæ*]; LÜHE (218).

Bothriocephalidæ divided into sub-families, (1) *Triænophorinæ*, (2) *Ptychobothriinæ*, (3) *Dibothriocephalinæ*, (4) *Cyathocephalinæ*; LÜHE (218).

Bothriocephalus, sp. from the Fur-Seal, p. 169, figg. 97–100; STILES & HASSALL (361): *B. dalmatinus*, Stoss. from *Zeus faber*, figured; STOSSICH (362): *B. cordatus* Leuck, *tetragonus*, n. sp. from *Anarrhicas minor*, *levinseni*, n. sp. from *Cyclopterus lumpus* which also lodges *Bothriotænia fragilis* (Rud); ARIOLA (11): *B. monticellii*, n. sp. from *Trachypterus iris* in Sardinia, *clavibothrium*, n. sp. from *Arnoglossus laterna* at Naples, *bramæ*, sp. inc. from *Brama rayi* at Naples; ARIOLA (8): *B. zschokkei* Fuhrmann, pp. 715–719; LÜHE (215): *B. vallei* n. sp. from *Mullus barbatus*; STOSSICH (366).

Bothriotænia dalmatina (Stoss.), *infundibuliformis* (Rud.), *rectangula* (Rud.); ARIOLA (8).

Calliobothrium corollatum Abildg. p. 172, and *filicolle* Zschokke, p. 173; CONDORELLI (102).

Choanotænia infundibulum (?); COHN (97).

Clestobothrium, n. g., p. 43 [*Ptychobothriinæ*] type *Cl. crassiceps* (Rud.); LÜHE (218).

Crepidobothrium, n. g. for *C. gerrardii* (Baird) from *Boa constrictor*, p. 20; MONTICELLI (270).

Cyathocephalus catinatus Rigg. from *Solea vulgaris*; RIGGENBACH (325).

Davainea bonini, n. sp., MÉGNIN (247); *madagascariensis*, BLANCHARD (39); *cantaniana* (Pol.), RAILLIET et LUCET (317); *guevillensis* Mégnin, BLANCHARD (38): *D. proglottina* (Dav.); MAROTEL (232).

Dibothriocephalus, n. g. (= *Bothriocephalus* R. Bl. 1894, non Rudolphi, 1808–1810), type *D. latus* (L.), sub. fam. *Dibothriocephalinæ*, p. 46; LÜHE (218).

Dicranotænia coronula (Duj.); WOLFFHÜGEL (405).

Dilepis Weinland = *Drepanidotænia* Railliet, p. 417; COHN (94): *D. undula* (Schrank); COHN (97).

Diplacanthus, see *Hymenolepis*.

Diplogonoporus Lönnbg. 1892 (non Stiles, 1896) = *Krabbea* R. Bl. 1894, p. 49; LÜHE (218).

Drepanidotænia Raill. and *Dicranotænia* Raill.; COHN (94), RAILLIET (314), WOLFFHÜGEL (404): *D. gracilis* (Krabbe); WOLFFHÜGEL (405).

Fimbriaria fasciolaris (Pallas) = *Fimbriaria malleus* (Goeze), type of sub-family *Fimbriariinæ*; WOLFFHÜGEL (405).

Fistulicola, n. g. *Triænophorinæ*, type *plicatus* Rud. from *Xiphias gladius*; LÜHE (215, pp. 706–710 and 218, p. 36).

Gyrocœlia n. g. *perversus*, sp. from *Himantopus autumnalis* and *Limosa rufa*; FUHRMANN (133 & 134).

Hymenolepis, Blanchard; COHN (97): *Hymenolepis* or *Diplacanthus serpentulus* Schrank, *stylosa* Rud., *farciminalis* Batsch.—all from *Corvidæ*; VOLZ (388): *H. tetraonis*, n. sp. from *Tetrao urogallus* and *Tetrao tetrix* shot in the Black Forest; WOLFFHÜGEL (405).

Ichthyotænia calmettei Barrois from *Bothrops lanceolatus*; MAROTEL (228).

Lepidotrias Weinland = *Hymenolepis* Blanchard, p. 420; COHN (94 & 97).

Mesocestoides litteratus (Batsch.), p. 170; CONDORELLI (102).
Moniezia alba (Perroncito), p. 166; CONDORELLI (102).
Monopylidium n. g. for *Tænia musculosa* Fuhrm. and *T. crateriformis* Goeze; FUHRMANN (135).
Nematotænia n. g. type *Tænia dispar* Goeze, Footnote, p. 526; LÜHE (216).
Oochoristica incisa, n. sp. from intestine of *Meles taxus*; RAILLIET (311).
Prosthecocotyle Monticelli, 1892 = *Tetrabothrius* Rud. 1819, p. 43. [This has nothing to do with *Tetrabothridæ*!]; LÜHE (218).
Prosthecocotyle monticellii from *Fulmarus glacialis L.*, *umbrella* from *Diomedea* sp., *eudyptidis* from *Eudyptes cataractes*, *intermedia* from *Procellaria* sp., *campanulata* from *Procellaria* sp.; FUHRMANN (136), n. spp.
P. torulosa (Linstow) = *Tetrabothrium torulosum* Linst. from *Diomedea brachyura*, *heteroclitum* (Dies.) = *Tetrabothrium auriculatum* Linst. from *Thalassoeca glacialoïdes* and *Daption capensis*; FUHRMANN (139).
Proteocephalus Weinland, 1858 = *Tetracotylus* Monticelli, 1891 = *Ichthyotænia* Lönnberg, 1894; MONTICELLI (270, p. 25).
Schistocephalus nodosus (Rud.) = *Bothriocephalus zschokkei* Fuhrmann, pp. 715–719; LÜHE (215).
Scolex delphini Stoss. from *Grampus griseus*, figured; STOSSICH (362).
Scyphocephalus Riggenh. placed in the sub-family *Dibothriocephalinæ*, p. 48; LÜHE (218): *S. bisulcatus* Rigg. from stomach and intestine of *Varanus salvator* from Sumatra; placed with *Bothriocephalus* and *Schistocephalus* in the sub-family *Monogonoporinæ*; RIGGENBACH (324): see also ARIOLA (10).
Tænia candelabraria Goeze; WOLFFHÜGEL (405): *T. constricta* Mol., *undulata* Rud., *angulata* Rud. from *Corvidæ*; VOLZ (388): *T. brachysoma*, n. sp., from dog; SETTI (345): *T. vaginata*; SETTI (348): *T. depressa* von Siebold; FUHRMANN (132): *T. lagenocollis*, n. sp. (Mégnin) [= *Drepanidotænia infundibuliformis* (Göze) Blanch.]; MÉGNIN (246); BLANCHARD (38): *T. parina* (Duj.), description; MAROTEL (232).
Taphrobothrium n. g., p. 44 [*Ptychobothriinæ*], type *T. japonense*, n. sp. from *Muræsox cinereus* (Forsk.); LÜHE (218).
Tetrabothrium gerrardii Baird, see *Crepidobothrium*; MONTICELLI (270).
Tetrarhynchus lintoni nom. mut. for *Tetr. tenue* Linton, p. 240, *diesingi* nom. mut. for *Tetrarhynchobothrium tenuicolle* Dies., p. 337; VAULLEGEARD (382).
Triænophorus nodulosus (Pall.) = *Tænia nodulosa* Pallas, pp. 712–714; LÜHE (215).

TREMATODA.

GENERAL BIOLOGY.

Monograph on *Distomum sinense* Cobbold [parasite in human bile-ducts]; BILLET (36).

Monograph of *Onchocotylinæ*: historical, anatomical and systematic; CERFONTAINE (78).

Amphitypy or situs inversus of the genital apparatus in *Distomum heterolecithodes*; BRAUN (58); JACOBY (172–173): *Opisthorchis*; JACOBY (174): in *Trematoda*; LOOSS (213, p. 555): *Dist. sauromates* Poir. and *zschokkei* Volz; LÜHE (216, p. 533): in *Onchocotylinæ*; CERFONTAINE (78, p. 448).

Development and Migration of *Distomum leptostomum* Olsson and *spinulosum*, n. sp. [See also *Cercariæum*]; HOFMANN, K. (168).

Genital sucker (Genitalnapf) of *Distomum megastomum* Rud.; JACOBY, S. (174).

Monostomosis of Ducks (*Monostomum flavum* seu *mutabile*); MAGALHÃES (223).

Parallel evolution of diœcious forms allied to *Distomum* and *Monostomum* respectively, viz. *Schistosomidæ* and *Didymozoonidæ*, p. 659; LOOSS (213).

Pathogenic action on the mucosa of the rumen of the domestic ox of *Amphistomum conicum*; MINGAZZINI (262).

Postlarval growth and structure of *Macraspis elegans* Olsson (*Aspidobothridæ*); JÄGERSKIÖLD (175).

Standards of size of *Distomidæ*, p. 556; LOOSS (213).

Taxonomy. Principles of classification; LOOSS (213); LÜHE (216).

Topography of the genital apparatus; LOOSS (213).

DISTRIBUTION.

Aves. Trematode fauna; HAUSMANN (162): *Clinostomum*, comprising Distomid species living when mature in the mouth, throat and œsophagus of storks and herons (*Ciconiæ*); BRAUN (60): *Philophthalmus* under the eyelids of *Corvus*, *Milvus* etc.; LOOSS (213): *Echinostomum* in intestine, cœca and bursa fabricii of birds; LOOSS (213).

Brazilian river-tortoises; BRAUN (56).

Chelonia, Marine. *Monostomum* etc.; BRAUN (56 & 57); *Cricocephalus* in stomach of *Chelonia mydas*; LOOSS (213): *Hapalotrema* in heart of *Thalassochelys corticata*; LOOSS (213).

Egypt. LOOSS (213).

German rivers, North Sea and hot springs of the Sahara: *Gyrodactylus medius* Kath.; KATHARINER (181).

Insectivorous bats and chamæleons. Small Distomids belonging to genus *Lecithodendrium*, p. 618; LOOSS (213).

Lorraine. *Gyrodactylus elegans* v. Nordm. on *Gasterosteus* in the salt marshes, p. 270; FLORENTIN (127).

New Guinea; BRAUN (57).

Ophidia. List of Distomidæ: *D. naja* Rud. in a new host, *Zamenis viridiflavus* Dum. et Bib., in the lung; VOLZ (386).

Pisces. *Acanthocotyle* on skin of *Raja clavata*; MONTICELLI (268): *Onchocotylinæ* on branchiæ of Selachians; CERFONTAINE (78). Distomids in Teleostei; JACOBY (174); BILLET (36). Monostomids in Teleostei; LOOSS (213).

Mammalia. *Distomum hepaticum* in the spleen of the sheep; RÁTZ (318); *D. cœlomaticum* in Indian Ox; *D. sinense* in human bile-ducts; BILLET (36).

Sicily. *Bilharzia crassa*; BARBAGALLO (18).

Unionidæ; KELLY (182).

Vertebrata, cold-blooded. *Phyllodistomum*, comprising the Distomids which live in the urinary bladder; BRAUN (60).

SYSTEMATIC.

Trematode (unnamed) parasitic in the pelagic Decapod Crustacean *Cerataspis*; BONNIER (48A).

Acanthocotyle lobiancoi Monticelli, from skin of back of *Raja clavata*, p. 111, *elegans* Mont. from same place found 3 years later, p. 113, *oligoterus*, n. sp. from skin of belly of *Raja clavata*, p. 115; MONTICELLI (268).

Acanthonchocotyle n. g. for *A. appendiculata* (Kuhn) and *A. canicula* Cerf., pp. 373 & 455, *canicula*, n. sp. from gills of *Scyllium canicula*, pp. 374 & 462; CERFONTAINE (78).

Acanthostomum n. g. type *A. spiniceps* Lss. p. 577; Looss (213).

Accacœlium Montic. type *A. contortum* (R.), p. 631; Looss (213).

Agamodistomum, n. g., *chimæræ*, n. sp. from peritoneum of *Chimæra monstrosa*; ARIOLA (9).

Anoiktostoma n. g.; STOSSICH (364), consult also Looss (213, p. 580).

Anadasmus n. g. type *A. amphiorchis* (Braun), p. 568; Looss (213).

Anchitrema n. g. type *A. sanguineum* (Sons.), p. 637; Looss (213).

Ascocotyle n. g. type *A. coleostoma* Lss. pp. 584 & 699, *minuta*, n. sp., p. 698, from intestine of dogs, cats and *Ardea cinerea*; Looss (213).

Aspidogaster vallei, n. sp. from *Thalassochelys caretta*; STOSSICH (366).

Astia n. g. type *A. renifera* Lss. (=*D. unicum* Lss.) p. 590, *impleta*, n. sp., p. 703 from midgut of *Tetrodon fahaka*; Looss (213).

Asymphylodora n. g. type *A. perlata* (v. Norden) p. 598; Looss (213).

Athesmia, n. g. type *A. heterolecithodes* (Braun), p. 635; Looss (213).

Azygia, n. g. type *A. tereticollis* (R.), p. 569; Looss (213).

Baris, n. g. type *B. proteus* (Brandes)=*Monost. proteus* Brandes, partim, pp. 669 & 770, from midgut of *Chelonia mydas*; Looss (213).

Bilharzia=*Schistosomum*, q. v.; KARTULIS (180), BARBAGALLO (18), RAILLIET (313).

Bilharzia kowalewskii Par. Ar., fig., p. 91; PARONA (292).

Bilharziella, n. g., type *B. polonica* (Kowalewski), here also *B. kowalewskii* (Parona), p. 657; Looss (213).

Brachycladium, n. g. type *B. palliatum* Lss. (1885), p. 558; Looss (213).

Brachycœlium (Duj.), type *Br. crassicolle* (R.), p. 611; Looss (213).

Brandesia, n. g. subgenus of *Brachycœlium*, type *B. turgida* (Brdes.); STOSSICH (365). Consult also Looss (213, pp. 623 & 624).

Brandesia turgida (Brandes), pp. 775–777, two figg.; Looss (213).

Bunodera Railliet (=*Crossodera* Duj.), and its superficial analogy with *Creadium* and *Sphærostoma*, pp. 594–596 also p. 598, type *B. nodulosa* (Zeder.); Looss (213).

Calicotyle stossichi, n. sp. from rectal gland of *Mustelus lævis*; BRAUN (54).

Campula Cobbold, rejected as a spurious genus, pp. 559 & 560; Looss (213).

Cathæmasia, n. g. type *C. hians* (R.), p. 562; Looss (213).

Centrocestus n. g. type *C. cuspidatus* Lss., p. 584; Looss (213).

Cephalogonimus Poirier, type *C. lenoiri* Poirier, p. 627; Looss (213).

Cercaria pomatiæ, n. sp., from the liver of *Helix pomatia*; VANEY ET CONTE (381).

Cercariæum helicis Braun and *spinulosum*, n. sp., co-habiting in the kidney of Gastropods at Rostock; HOFMANN, K. (168).

Clinostomum Leidy, type *C. heterostomum* (R.), p. 649; Looss (213).

Clinostomum Leidy, 1856=*Mesogonimus* Monticelli, 1888; BRAUN (60).

C. foliiforme, n. sp., from *Ardea purpurea*; BRAUN (61): *C. heterostomum* (Rud.), includes the young forms *C. gracile* Leidy, *Distomum galactosomum* Leidy, *D. reticulatum* Looss, and probably the adult forms *D. dimorphum* Dies. and *D. aquilæ* Leidy; MACCALLUM (221). See however Looss (213) on *C. gracile*, p. 650, and BRAUN (60): *C. sorbens detruncatum*, *dimorphum* (Dies.), *heluans*, *lambitans*, *foliiforme*; BRAUN (60): n. spp.

Cœnogonimus n. g. type *C. heterophyes* (v. Sieb.), pp. 585 & 699, *fraternus* Lss., p. 700; Looss (213).

Cotylogonimus n. g. type *Dist. heterophyes* v. Sieb., p. 538; LÜHE (216), but see *Cœnogonimus*.

Creadium n. g. type *C. isoporum* Lss., p. 570; Looss (213).

Cricocephalus n. g. type *C. delitescens* [illegible] 666 and pp. 759–762. Stomach of *Chelonia mydas*; [illegible]

Cryptocotyle n. g. type *Dist. concavum* Crepl., with *lingua* Crepl. p. 539; LÜHE (216), but see *Tocotrema*.

Cyclocœlum Brandes, type *C. mutabile* (Zeder), p. 659; LOOSS (213).

Cymatocarpus n. g. type *C. undulatus*, n. sp., pp. 593 & 711. From small intestine of *Thalassochelys corticata*; LOOSS (213).

Dicrocœlium Duj. partim. type *D. lanceatum* Stiles & Hassall, p. 632, *strigosum*, n. sp. from the gall ducts of *Merops apiaster*, p. 727; LOOSS (213).

D. scorpænæ Rud., figured, p. 89; PARONA (292).

Distomidæ Monticelli (p.p.). Following subfamilies recognized and diagnosed:—(1) *Fasciolinæ*, p. 556, (2) *Omphalometrinæ*, p. 562, (3) *Opisthorchiinæ*, p. 563, (4) *Cœnogoniminæ*, p. 583, (5) *Philophthalminæ*, p. 586, (6) *Lepodermatinæ*, p. 588, (7) *Gorgoderinæ*, p. 604, (8) *Brachycœliinæ*, p. 607, (9) *Pleurogenetinæ*, p. 615, (10) *Cephalogoniminæ*, p. 628, (11) *Syncœliinæ*, p. 642, (12) *Pronocephalinæ*, p. 665, (13) *Microscaphinæ*, p. 667, (14) *Dicrocœliinæ*, (15) *Telorchiinæ*, (16) *Heterolopinæ*; LOOSS (213).

Distoma tartinii, n. sp., from *Oblata melanura*; STOSSICH (366).

Distomum Retzius. This name is discarded as a genus and is only preserved in designation of family *Distomidæ*, which is subdivided into subfamilies and genera; LOOSS (213).

D. continuum, n. sp. from gills of *Carcharias rondelettii*; ARIOLA (9).

D. leptostomum Olsson (=*D. caudatum* Linst.), and *spinulosum*, n. sp., experimentally reared in *Erinaceus europæus* by HOFMANN, K. (168).

D. folium v. Olfers, is made the type of a new genus *Phyllodistomum* by BRAUN (60), and *Spathidium* by LOOSS (213).

D. heterolecithodes, n. sp. from gall-ducts of *Porphyrio porphyrio* [=*Athesmia heterolecithodes* q. v.]; BRAUN (58), JACOBY (174).

D. fellis Olsson, p. 12, from gall-bladder of *Anarhichas lupus* from North Sea, *megastomum* Rud., p. 16, from stomach of various Selachians; JACOBY (174).

D. (*Brachylaimus*) *zschokkei*, n. sp. from lung of *Heterodon platyrhinus* Latr.; VOLZ (386, p. 231).

D. clava Dies., from *Eunectes scytale*, description; LÜHE (216).

D. ocreatum (Zed.)=*D. lorum* Duj.; LÜHE (216), p. 538, *D. ocreatum* Olsson (nec Molin nec Rud.); LOOSS (213), pp. 640 & 641, *D. ocreatum* Rud.=*D. carolinæ* Stoss.; LOOSS (213), p. 641. [There seems to be some confusion here?] See *Pronopyge*.

D. gelatinosum Rud., *irroratum* Rud.; BRAUN (57). See also LOOSS (213, p. 579).

D. porrectum, n. sp. from *Saurophaga saurophaga*, *amphiorchis*, n. sp. from *Thalassochelys corticata*, *anthos*, n. sp. from a Chelonian; BRAUN (57).

D. pachyderma from ? *Thalassochelys caretta*, *soleare* from *Chelone midas*, *scyphocephalum*, *pulvinatum*, *bifurcum*, *pleroticum* from Brazilian river tortoises; BRAUN (56), n. spp.

D. westermanni Kerbert, is made the type of a new genus, *Paragonimus* by BRAUN (60) and *Polysarcus* by LOOSS (213).

D. opacum Ward, regarded as type of a peculiar genus, unnamed, p. 621; LOOSS (213).

D. (*Macrodera*) *naja* R., p. 603; LOOSS (213).

D. cœlomaticum Giard & Billet, from Indian Ox, p. 283, *sinense* Cobbold, in human bile-ducts, p. 290: *D. hypselobagri*, n. sp., from swimming bladder of a Tonkinese Siluroid, *Hypselobagrus*, sp., p. 288; BILLET (36).

D. cucumerinum R., see under *Monostomum*; BRAUN (59).

Dolichosomum n. g. type *D. lorum* (Duj.), p. 652; LOOSS (213).

Echinostomum R.=Dujard. partim type *E. echinatum* Zeder, pp. 571, 574 & 679–684, *bilobum* R., p. 684, *pseudoechinatum* Olsson, p. 685, *cury-*

porum Lss., p. 686, *mordax*, n. sp. from intestine of *Pelecanus onocrotalus*, p. 688, *pendulum*, n. sp. from cœca of *Recurvirostra avocetta*, p. 688, *elegans*, n. sp. from *Phœnicopterus roseus*, p. 692, *bursicola*, n. sp. from bursa fabricii of *Milvus parasiticus* and cloaca of *Falco tinnunculus*, p. 694; Looss (213).

Enodia n. g. type *E. megachondrus*, n. sp., pp. 592 & 709, from intestine of a *Testudo* (? *græca*); Looss (213).

Fasciolopsis n. g. for *F. crassa* (Busk) and *F. jacksoni* (Cobbold), p. 557; Looss (213).

Galactosomum, proposed new genus for *Monostomum lacteum* Jägerskiöld, allied to *Haplorchis*, p. 671; Looss (213).

Glossidium n. g. type *G. pedatum*, n. sp., pp. 591 & 705, from midgut of *Bagrus bayad* and *Bagrus docmac*; Looss (213).

Gorgodera n. g. type *G. cygnoides* (Zeder), p. 605, *amplicava*, n. sp., and *simplex*, n. sp., p. 606; Looss (213).

Hæmatolœchus n. g. type *H. variegatus* (R.), *similis*, n. sp., *asper* sp. inq., p. 601 [footnote]; Looss (213).

Halipegus n. g. type *H. ovocaudatus* (Vulpian), p. 645; Looss (213).

Hapalotrema n. g. type *H. constrictum* (Leared), pp. 656 & 750, from ventricle and right auricle of *Thalassochelys corticata*; Looss (213).

Haplometra n. g. type *H. cylindracea* (Zeder), p. 599; Looss (213).

Haplorchis n. g. type *H. pumilio* Lss., p. 670, *cahirinus* Lss. = *Dist. cahirinus* Lss., a Monostomid from intestine of *Bagrus bayad* and *Bagrus docmac*, p. 752; Looss (213).

Hemiurus Rud. = *Apoblema* Duj., pp. 637–640, type *H. appendiculatus* (R.), *bothryophorus* (Olsson), p. 728, *digitatus*, n. sp. from stomach of *Sphyræna vulgaris*, p. 729; Looss (213).

Heterolope n. g. type *H. leptostoma* (Olsson), p. 651, *æquans*, n. sp., p. 746, from midgut of *Gerbillus ægyptius*; Looss (213).

Holometra n. g. type *H. exigua* (Mühling), pp. 564 & 678; Looss (213).

Homalogaster poirieri Giard & Billet, from Indian Ox, p. 287; Billet (36).

Ityogonimus n. g. type *Distomum ocreatum* (Zed.) = *D. lorum* Duj.; Lühe (216), p. 538, but see *Pronopyge*.

Lecithodendrium Looss, type *L. lagena* (Brandes) = *Dist. ascidia* Van Ben., pp. 609 & 715, *glandulosum* Lss. = *chefrenianum* Lss., p. 716, from *Rhinopoma microphyllum* and *Taphozous perforatus*, *hirsutum* Lss. from *Chamæleo basiliscus* and *Taphozous perforatus*, p. 717; Looss (213).

Lecithodendrium nigrovenosum (Bellingham), Specific Description, pp. 533–535; Lühe (216).

Lepoderma n. g. type *L. ramlianum* Lss., p. 589: here also *L. cirratum* (R.) and *L. mentulatum* (R.); Looss (213).

Leptalea n. g. type *L. exilis*, n. sp., pp. 628 & 719, from *Bagrus bayad*; Looss (213).

Levinsenia n. g. subgenus of *Brachycœlium*; Stossich (365). Consult also Looss (213, p. 620).

Liopyge n. g. type *L. bonnieri* (Montic.), p. 642; Looss (213).

Lyperosomum, new genus suggested but not finally adopted to include *Dicrocœlium strigosum* (q. v.) etc., p. 635; Looss (213).

Macrodera n. g. type *M. naja* (R.), p. 604; Looss (213).

Megacetes n. g. type *M. triangularis* (Diesing), pp. 630 & 725 from cloaca of *Passer domesticus*, *Glareola pratincola*, *Merops apiaster*, *Merops viridis*; Looss (213).

Metorchis n. g. type *M. albidus* (Braun), p. 564; Looss (213).

Microcotyle lichiæ, n. sp. from gill of *Lichia amia*; Ariola (9).

Microscapha n. g. type *M. reticularis* (Van Ben.), pp. 668 & 763, from midgut of *Chelonia mydas*, *linguatu* [illegible] tum of same host, p. 766, *sagitta*, n. sp. (= *M* [illegible] from rectum of same host; L [illegible]

Monostomidæ, subfamilies recognized and diagnosed: (1) *Pronocephalinæ*, p. 665, (2) *Microscaphinæ*, p. 667, (3) *Haplorchiinæ*, p. 671; Looss (213).
Monostomum renicapite Leidy from *Sphargis coriacea*; Braun (56).
M. capitellatum Rud. and *spinosissimum* Stoss., probably the types of distinct genera, p. 669, *M. proteus* Brandes divided between *Baris proteus* and *Microscapha sagitta*, n. sp., pp. 767–773; Looss (213).
M. cucumerinum (Rud.) = *Dist. cucumerinum* Rud.; Braun (59).
Notocotyle Diesing, type *N. verrucosa* (Froelich), p. 661; Looss (213).
Ogmogaster Jägerskiöld, type *O. plicatus* (Creplin), p. 664; Looss (213).
Omphalometra n. g. type *O. flexuosa* (R.), p. 562; Looss (213).
Onchocotylinæ, new section for species belonging to the old genus *Onchocotyle* Diesing, p. 373; Cerfontaine (78).
Opisthioglyphe n. g. type *O. endoloba* (Duj.), p. 588; Looss (213).
Opisthorchis R. Blanchard, type *O. tenuicollis* (R.), pp. 564 & 674, *simulans* Lss. from gall-ducts of *Anas penelope* and liver of *Fulix cristata*, p. 673; Looss (213).
Otiotrema Setti, type *O. torosum* Setti, pp. 644 & 736–746; 30 specimens in company with 400 *Syncœlium ragazzii* on gill-lamellæ of *Lamna* sp.; Looss (213).
Paragonimus n. g. type *P. westermanni* (Kerbert); this generic name appears to take precedence of *Polysarcus* q. v.; Braun (60).
Phaneropsolus n. g. type *P. sigmoideus*, n. sp., pp. 608 & 712, from midgut of *Passer domesticus* and *Caprimulgus europæus*, *longipenis*, n. sp. from midgut of an unnamed ape, latter species allied to *P. oviformis* (Poirier); Looss (213).
Philophthalmus n. g. type *P. palpebrarum*, n. sp., pp. 587 & 701; two specimens found at Cairo under the eyelids of *Corvus cornix*, one in each eye; later found in same position in *Milvus parasiticus*: allied is the *P. lucipetus* (R.); Looss (213).
Phyllodistomum n. g. type *P. folium* (v. Olfers): this generic name apparently takes priority over *Spathidium* q. v.; Braun (60).
Plagiorchis n. g. type *Distomum mentulatum* Rud., p. 530, with *D. cirratum* R., *ramlianum* Lss. etc.; Lühe (216): but see *Lepoderma*.
Plectanocotyle lorenzii, n. sp. from branchiæ of *Trigla* sp.; Monticelli (269).
Pleorchis urocotyle, n. sp. from intestine of *Scorpæna scrofa*, together with *Dicrocœlium scorpænæ*, p. 90; Parona (292).
Pleurogenes Lss. type *Pl. claviger* (R.) = *Dist. neglectum* v. Linst., here also *Pl. medians* Olsson = *Dist. tacapense* Sonsino, p. 616; Looss (213).
Podocotyle planci, n. sp. from *Ranzania truncata*; Stossich (366).
Polysarcus n. g. type *P. westermanni* (Kerbert.), p. 561, see *Paragonimus*; Looss (213).
Progonus n. g. type *P. mülleri* (Levinsen), p. 643; Looss (213).
Pronocephalus n. g. type *P. trigonocephalus* (R.), pp. 666 & 756, from the small intestine near and in the pylorus of *Chelonia mydas*; Looss (213).
Pronopyge n. g. type *Pr. ocreata* (Rud.) = *Dist. carolinæ* Stossich, p. 641; Looss (213).
Prosotocus n. g. type *P. confusus* Lss., p. 616 (= *Dist. clavigerum* Duj.); Looss (213).
Prosthogonimus n. g. type *Dist. ovatum* (R.) with *Dist. pellucidum* v. Linst. p. 539; Lühe (216), but see *Prymnoprion*.
Prymnoprion n. g. type *Pr. ovatus* (R.), pp. 628 & 720 from the *Bursa fabricii* of *Passer domesticus*, *anceps*, n. sp. from rectum of *Machetes pugnax*, p. 722; Looss (213).
Psilostomum n. g. type *P. platyurum* (Mühling), p. 573; Looss (213).
Pycnoporus n. g. type *P. heteroporus* (Duj.), p. 610, *acetabulatus*, n. sp., p. 717, from *Vesperugo kuhli*; Looss (213).

Pyelosomum n. g. type *P. cochlear*, n. sp., pp. 667 & 773, in urinary bladder of *Chelonia mydas*; Looss (213).

Pygorchis n. g. type *P. affixus*, n. sp., pp. 587 & 702, from cloaca of *Corvus cornix*, *Falco tinnunculus*, *Circus æruginosus*, *Recurvirostra avocetta*; Looss (213).

Rajonchocotyle n. g. for *R. batis* Cerf., *R. prenanti* (Saint Remy) and *R. alba* Cerf., pp. 373 & 455: *R. batis*, n. sp. from gills of *Raja batis*, p. 462: *R. alba*, n. sp. from *Raja alba*, p. 463; CERFONTAINE (78).

Schistosomidæ, new family of digenetic Trematodes to include the genera *Koellikeria* Cobbold, *Schistosomum* Weinland and *Bilharziella* n. g. pp. 542 & 543; Looss (213).

Schistosomum Weinland (=*Bilharzia* Cobbold), type *Sch. hæmatobium* (v. Sieb.), p. 658; Looss (213).

S. bovis (Sonsino) from the liver of an Annamese calf; RAILLIET (313).

Spathidium n. g. type *Sp. folium* (v. Olfers), p. 605, see *Phyllodistomum*; Looss (213).

Sphærostomum Stiles & Hassall type *Sp. globiporum*, pp. 595 & 648). On p. 595 it is spelt *Sphærostoma*, as by RUDOLPHI. For discussion of the name *Sphærostoma* Rudolphi see pp. 646–648; Looss (213).

Squalonchocotyle n. g. for *S. borealis* (P. J. Van Ben.), *S. vulgaris* Cerf., *S. canis* Cerf., *S. abbreviata* (Olsson), *S. grisea* Cerf. and *S. spinacis* (Goto), pp. 373–376 & 454, *S. vulgaris*, n. sp. from gills of *Mustelus vulgaris*: *S. canis*, n. sp. from *Galeus canis*: *S. grisea*, n. sp. from *Hexanchus griseus*; CERFONTAINE (78) pp. 375 & 376 and 457–461.

Stephanostomum n. g. type *S. cesticillus* (Molin), p. 576 & 696; Looss (213).

Stictodora n. g. type *S. sawakinensis*, n. sp., pp. 671 & 754, from intestine of a species of *Larus*; Looss (213).

Stomylus n. g. type *S. singularis* (Molin), pp. 629 & 723, from rectum of *Glareola pratincola*; Looss (213).

Styphlodora n. g. type *St. serrata*, n. sp., pp. 592 & 707 from intestine of a *Varanus niloticus* which had probably died in the Zoological Garden at Leipzig (1882); also *St. solitaria*, n. sp. from midgut of *Thalassochelys corticata*, p. 708; Looss (213).

Syncœlium n. g. type *S. ragazzii* (Setti), pp. 643 & 731–736, 400 specimens in company with *Otiotrema torosum* on gills of a possibly new species of *Lamna*; Looss (213).

Telorchis n. g. proposed for *Distomum clava* Dies., but the same name is given simultaneously by Looss for another allied type; LÜHE (216).

Telorchis n. g. type *T. linstowi* (Stossich), p. 566 non *Telorchis* Lühe q. v.; Looss (213).

Tergestia n. g.; STOSSICH (364): consult also Looss (213), p. 580.

Tocotrema n. g. type *T. lingua* (Creplin), p. 585, with *T. concavum* (Creplin); Looss (213).

Tristomum, Synopsis of Species, pp. 124 & 125: *T. onchidiocotyle*, n. sp. from a tunny, p. 121; SETTI (347).

T. rotundum Goto=*coccineum* Cuvier: *T. ovale* Goto=*histiophori* Bell =*læve* Verrill; SETTI (346).

Urogonimus Monticelli, type *U. macrostomus* (Rud.), p. 653, *insignis*, n. sp., p. 748, cloaca of *Fulica atra*; Looss (213).

Urotocus n. g. type *U. rossittensis* (Mühling), p. 654; Looss (213).

NEMATHELMINTHES.

NEMATODA

(including GORDIACEA).

GENERAL BIOLOGY.

Anatomy and Biology of *Oxyuris curvula* Rud.; EHLERS, H. (120): *Oxyuris flagellum* Ehr. and *Ascaris lumbricoides* L.; NASSONOW (278).

Anguilluliasis; PAPPENHEIM (291); BRAUN (55); LEICHTENSTERN (198); ZINN (416).

Ankylostomiasis; LOOSS (212); LEICHTENSTERN (199 & 200); KORBELIUS (183); ANON. (6).

Buccal armature of *Ascaris conocephalus* identical with that of *A. lumbricoides*; GUIART (157).

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Galanthula, n. gen. for *G. marina*, n. sp., living on hydrocaulus of *Obelia*, p. 110; HARTLAUB (55).
Gemmaria gemmosa McCrady, the medusa of *Corynitis agassizii*, q. v.; MURBACH (96).
Gonionemus suvaënsis, n. sp., p. 164, Fiji; AGASSIZ & MAYER (2).
Halecium wilsoni, n. sp., p. 343; *densum*, n. sp., p. 343, co-habiting at Bremerton; *H. densum* is said to be a possible variety of *H. scutum* Clarke; CALKINS (18): *H. tortile*, n. sp., *schneideri*, n. n. for *H. nanum* Schneider; BONNEVIE (15): *H. geniculatum*, n. sp., *corrugatum*, n. sp.; NUTTING (99).
Hebella cylindrica Ldf. from East and West Indies, p. 31, [Campanularidæ] growing on colonies of *Sertularia cylindritheca* Allm. in 80 metres; VERSLUYS (130).
Hydrallmania distans, n. sp.; NUTTING (99).
†*Hydromedusites*, nov. nom. type *H. radiatus* Lns. p. 686; FRECH (36).
Hypolytus, n. gen. *peregrinus*, n. sp.; MURBACH (96).
Lafoëa dumosa Fleming. Historical account and description of gonangia; NUTTING (99).
Laodicea marama, n. sp., p. 162, *fijiana*, n. sp., p. 163, Fiji; AGASSIZ & MAYER (2).
Liriope hyalina, n. sp., p. 166, Fiji; AGASSIZ & MAYER (2).
Lovenella clausa (Lovén), a rare Hydroid, p. 104; HARTLAUB (55).
Lytocarpus grandis (Clarke) = *Nematophorus grandis* Clarke, West Indies, 80 metres to 339 fms., pp. 51–58; VERSLUYS (130).
Margelopsis hæckelii Hartl. (Codonidæ); HARTLAUB (56).
Mitrocoma mbengha, n. sp., p. 168, Fiji; AGASSIZ & MAYER (2).
Nemopsis gibbesii, McCrady referred to *Margelopsis*, HARTLAUB (56); compared with the Graptolites as a floating Tubularian, p. 565; FRECH (36).
Obelia gracilis, n. sp., p. 353, *surcularis*, n. sp., p. 355, *fragilis*, n. sp., p. 355, *griffini*, n. sp., p. 357; CALKINS (18).
Oceania pacifica, n. sp., *ambigua*, n. sp., p. 167, Fiji; AGASSIZ & MAYER (2).
Opercularella nana, Hartl. on *Hydrallmania* and *Tubularia*, p. 108; HARTLAUB (55).

Ophiodes gorgonoides (G. O. Sars); BONNEVIE (15).
Pandea violacea, n. sp., p. 160, Fiji and Tortugas; AGASSIZ & MAYER (2)
Pennaria vitrea, n. sp., p. 161, Fiji (Medusa); AGASSIZ & MAYER (2).
Perigonimus sarsii, n. sp.; BONNEVIE (15).
Perisiphonia chazaliei, n. sp., [Perisiphonidæ], West Indies, 80 metres, pp. 32–36; VERSLUYS (130).
Pleurocarpa ramosa Fewkes, allied to *Lytocarpus*, p. 57; VERSLUYS (130).
Plumularia pinnata L. var.; BONNEVIE (15).
Polycanna purpurostoma, n. sp., p. 169, Fiji; AGASSIZ & MAYER (2).
Selaginopsis mirabilis (Verrill); BONNEVIE (15).
Sertularella nodulosa, n. sp., p. 360; CALKINS (18).
Sertularia gracilis Hassall probably a *Desmoscyphus* but not synonymous with the *D. gracilis* Allman, pp. 41 & 42; VERSLUYS (130)
Staurodiscus nigricans, n. sp., p. 164, Fiji; AGASSIZ & MAYER (2).
Stylactis hooperii, n. sp., allied to *Hydractinia*, on shells of living *Ilyanassa obsoleta*; SIGERFOOS (118).
Thuiaria divergens, n. sp., p. 372, Funafuti; WHITELEGGE & HILL (134).
Tiaropsis rosea, n. sp., p. 168, Fiji; AGASSIZ & MAYER (2).

HYDROCORALLINA.

GENERAL BIOLOGY.

Histology. Myophan axis in the stinging threads of *Millepora*; HICKSON (62).

Liberation of free-swimming Medusæ of *Millepora* observed; DUERDEN (32).

SYSTEMATIC.

†*Labechia huronensis* (Billings) [Stromatoporidæ]; LAMBE (76).
Millepora alcicornis L. Description and illustration of different facies assumed by this Hydrocoralline; HICKSON (61 & 62).
†*Tragos pisiforme* Gldfs.; FORTIN (35).

SIPHONOPHORA.

GENERAL BIOLOGY.

Cytology; MONTGOMERY (92).

Histology: Structure of the nematocyst batteries; SCHNEIDER, K. C. (116).

DISTRIBUTION.

Fiji; AGASSIZ & MAYER (2).
Funafuti; WHITELEGGE & HILL (134).
California: *Praya californica*; GRAVIER (46).
Tortugas: *Agalma pourtalesii* found also at Fiji; AGASSIZ & MAYER (2).

SYSTEMATIC.

Agalma pourtalesii, n. sp., p. 180, Fiji and Tortugas; AGASSIZ & MAYER (2).
Diphyopsis angustata Haeckel, p. 179, Fiji; AGASSIZ & MAYER (2).

Diplophysa köllikeri Haeckel is the free monogastric or *Eudoxia*-phase of *Sphæronectes köllikeri* Huxley, pp. 177–179; AGASSIZ & MAYER (2).
Huxleya, proposed new genus for *Praya californica*, n. sp., if that species should prove to have normally only one nectosome, but the name is preoccupied by a Bryozoan genus; GRAVIER (46).
Physalia megalista Lam. differentiated from *Ph. utriculus*, pp. 377–383: Chun (1887) united all Indo-Pacific forms under *Ph. utriculus*; WHITELEGGE & HILL (134).
Praya californica, n. sp.; GRAVIER (46).
Sphæronectes köllikeri Huxley, pp. 177–179, Fiji [see *Diplophysa*]; AGASSIZ & MAYER (2).

†*GRAPTOLITHIDA.*

GENERAL BIOLOGY.

Organisation, Classification and Mode of life; FRECH (36).

DISTRIBUTION.

General Distribution: Monograph by FRECH (36).
†Manx Slates: Isle of Man; BOLTON (14).
Vosgian Sandstone: *Monograptus beekii* Barr; BLEICHER (13).
Bohemia; PERNER (104 & 104 A).
Victoria, Australia; HALL (51 & 52).

SYSTEMATIC.

Axonophora and *Axonolipa* two new ordinal names for the divergent series of *Graptolites*; FRECH (36).
Bryograptus victoriæ, n. sp., p. 165, *clarki*, n. sp., p. 165; HALL (51).
Climacograptus bohemicus, n. sp.; PERNER (104 A).
Clonograptus Nicholson. Several species figured and described, none new; HALL (51).
Cyrtograptus tubuliferus, n. sp.; PERNER (104).
Dichograptidi Auctorum, 2nd Family of Graptolites, Char. emend. p. 580; with 3 Sub-families (*a*) *Didymograptini*, (*b*) *Tetragraptini*, (*c*) *Phyllograptini*; FRECH (36).
Dictyonema flabelliforme (Eichwald), Cambrian, p. 572: *D. sadewitzense* F. Roem. nov. nom. for *D. flabelliforme* Rœmer., p. 573. Lower Silurian; FRECH (36): *D. pulchellum*, n. sp., p. 174; HALL (51).
Didymograptus pritchardi, n. sp., p. 167, *taylori*, n. sp., p. 167; HALL (51).
Diplograptus sertularioides, n. sp., p. 628; FRECH (36).
Goniograptus macer, n. sp., p. 449; HALL (52).
Gothograptus, nov. gen., p. 670, type *G. nassa* (Holm.); FRECH (36).
Leptograptus antiquus, n. sp., p. 166; HALL (51).
Linograptus, nov. gen., type *L. nilssoni* (Barr.), p. 662; FRECH (36).
Monoclimacis, nov. gen. (= *Orthopodes* Tullb. ex parte), p. 621, type *Mon. vomerina* (Nich.) in the Family *Climacograptidi* Frech; FRECH (36).
Monograptus priodon Br. var. *rimatus*, n. v.; var. *validus*, n. v.; *unguiferus*, n. sp.; *Jaekeli*, n. sp.; *Suessi*, n. sp.; *hercynicus*, n. sp.; *Kayseri*, n. sp.; *gotlandicus*, n. sp.; *subcolonus*, n. sp.; *largus*, n. sp.; *transgrediens*, n. sp.; *vicinus*, n. sp.; *ultimus*, n. sp.; *clavulus*, n. sp.; *Fritschi*, n. sp.; *bohemicus* Barr. var. *rarus*, n. v.; PERNER (104): *M. tubiferus*, n. sp.; *jaculum* Lapw. v. *variabilis*, n. v.; *mirus* Barr.

MS.; *lobiferus* McCoy v. *Lapworthi*, n. v.; v. *undulatus*, n. v *retusus*, n. sp.; *Marri*, n. sp.; *Holmi*, n. sp.; *densus*, n. sp.; *Nicholson* n. sp.; *Clingani* Carr. v. *tenera*, n. v.; v. *Hopkinsoni*, n. v.; PERNE (104 A).

Rastrites peregrinus Barr. v. *longispinus*, n. v.; v. *approximatus*, n. v *Richteri*, n. sp.; PERNER (104 A).

Retiolites nassa Holm. See *Gothograptus*, figures; PERNER (104).

Stomatograptus grandis Suess=*St Törnquisti* Tullb. figures; PERNE (104).

Tetragraptus projectus, n. sp., p. 448; HALL (52): *T. decipiens*, n. sp p. 168; HALL (51).

Trigonograptus wilkinsoni, n. sp., p. 450; HALL (52).

CTENOPHORA.

GENERAL BIOLOGY.

Cleavage of the egg; RHUMBLER (109).
Phosphorescence; NUTTING (98).

DISTRIBUTION.

Fiji; AGASSIZ & MAYER (2).

SYSTEMATIC.

Beroë australis, n. sp., p. 177, Fiji; AGASSIZ & MAYER (2).
Eucharis grandiformis, n. sp., p. 176, Fiji; AGASSIZ & MAYER (2).

SCYPHOZOA.

GENERAL BIOLOGY.

Development; Gastrulation; Persistence of Blastopore; Migration o cells into blastocœl and their degeneration; Absence of stomodæum, etc in *Aurelia aurita*; HEIN (59).

Phosphorescence of *Linerges mercurius*; NUTTING (98).

Hypomerism and Hypermerism in *Aurelia aurita*; BALLOWITZ (9).

Variation curve of number of tentaculocysts in Ephyra-larvæ based o Browne's researches on *Aurelia aurita*; DUNCKER, Die Methode de Variationsstatistik. Arch. Entwickmech. viii, see p. 119.

Economics: Edible Medusæ of Japan; KISHINOUYE (69).

DISTRIBUTION.

Fiji; AGASSIZ & MAYER (2).
Japan: two species of *Rhopilema*; KISHINOUYE (69).
California: *Chrysaora gilberti*; KISHINOUYE (70).

SYSTEMATIC.

Aurelia vitiana, n. sp., p. 171, Fiji; AGASSIZ & MAYER (2).
Cassiopea ndrosia, n. sp., p. 175, Fiji; AGASSIZ & MAYER (2).
Cephea dumokorua, n. sp., p. 172, Fiji; AGASSIZ & MAYER (2).

Chrysaora gilberti, n. sp., California; KISHINOUYE (70).
Linerges aquila Haeckel, p. 170, Fiji; AGASSIZ & MAYER (2).
Nausithoë punctata var. *pacifica* nov. var., p. 170, Fiji; AGASSIZ & MAYER (2).
Pseudorhiza thocambaui, n. sp., p. 173, Fiji; AGASSIZ & MAYER (2).
Rhopilema esculenta Kish., Japan and China; *verrucosa*, n. sp., Japan. Both species occur in the Ariakě Bay; KISHINOUYE (69).

ANTHOZOA.

ALCYONARIA.

GENERAL BIOLOGY.

Anatomy, Histology and Budding of *Xeniidæ*; ASHWORTH (6).
Autozooids and Siphonozooids of *Heteroxenia elizabethæ* Köll.; ASHWORTH (6, pp. 284–291).
Embryology of *Alcyonium*. Collection of material; HICKSON (63).
Histology: Nematocysts of *Sarcophyton*, pp. 259 & 298; histology of *Xenia*; ASHWORTH (6).
Pigmentation: Blue Pigment of *Heliopora*; LIVERSIDGE (80).
Sexuality of the buds of *Corallium rubrum* Lam., p. 520. CUÉNOT, Bull. Sci. France Belgique xxxii.
Skeleton: formation of skeleton in Alcyonaria and Madreporaria; BOURNE (16).
Commensalism: *Peronanthus verrucellæ*, n. g. et sp., commensal with *Verrucella guadalupensis*, p. 203, pl. xxiii, figg. 1 & 2; HILES (65).
Coral-fishery in Algeria; LAYRLE (77).

DISTRIBUTION.

Arctic: *Paraspongodes* Kükth. a Boreal genus of Nephthyidæ. Synopsis and Distribution, pp. 141–156; MAY (89).
Antarctic: Alcyonaria, 24 species; MAY (88).
Madeira: *Coralliidæ*; *Corallium rubrum* of the Mediterranean not hitherto found at Madeira although occurring at Cape Verd Islands 900 miles further south; JOHNSON (67).
East Africa: Mozambique, Zanzibar, &c. *Alcyonacea*; MAY (89).
Ceylon: *Alcyonacea*; May (89).
Celebes: *Xenia hicksoni*; ASHWORTH (6).
Philippines: *Alcyonacea*; May (89).
Funafuti: *Gorgonacea*; HILES (64).
Loyalty Islands: *Gorgonacea*; HILES (65).
New Britain: *Gorgonacea*; HILES (65).
Kerguelen Island: *Primnoisis ambigua* also found at Lifu, Loyalty Islands; HILES (65).
Barbados: *Acanthogorgia muricata* Verrill, also found at Funafuti; HILES (64).
West Indies: *Verrucella guadalupensis* also found at New Britain; HILES (65).
†Cretaceous: *Gorgonacea*; HENNIG (60).

SYSTEMATIC.

Acamptogorgia spinosa, n. sp., Funafuti 40–90 fms., p. 47; HILES (64): *A. tuberculata*, n. sp.; HILES (65).

Acanthogorgia muricata Verrill, Funafuti and Barbados, p. 48; HIL (64): *A. spinosa*, n. sp., Blanche Bay, New Britain, 25 fath.; HIL (65).

Alcyonium elegantissimum, n. sp., Suez, p. 106; *ceylonense*, n. sp., p. 10 *leptoclados* Ehrb. v. *murale* n. v. Ceylon, p. 108; MAY (89): *pæssleri*, n. sp.; MAY (88, p. 6).

Ammothea bauiana, n. sp., p. 136; *thyrsoides* Ehrb. v. *ramosa* n. Tumbatu, p. 135; *digitata*, n. sp., Zanzibar, p. 136; *flava*, n. s Tumbatu, p. 137; *cervicornis*, n. sp., Mozambique and Zanzib p. 137; *tumbatuana*, n. sp., p. 138, *africana*, n. sp., Tumbatu, p. 13 *elegans*, n. sp., Tumbatu, p. 139: *A. brassica*, n. sp., Baui, p. 13 *viridis*, n. sp., Baui, p. 139; *spicata*, n. sp., Zanzibar, p. 140; *stu manni*, n. sp., East Africa, p. 140; *sanderi*, n. sp., Zanzibar, p. 14 MAY (89).

Cespitularia tæniata, n. sp., Mozambique, p. 89; *cærulea*, n. sp., Zanzib p. 90; MAY (89).

Chrysogorgia constricta, n. sp., Talili Bay, New Britain; HILES (65).

Clavularia longissima, n. sp., Zanzibar, p. 41; *gracilis*, n. sp., Mozambiq and Tumbatu, p. 41; *strumosa* Ehrb. Zanzibar, p. 42; *flava*, n. s Zanzibar, p. 43; *celebensis* Hickson, Tumbatu, p. 44; *inflata* Sche var. *luzoniana*, n. var. Luzon, p. 44; MAY (89).

†*Delheidia proxima* (Delheid), a giant Tubiporid; DELHEID (27).

Euplexaura antipathes (Klunzinger), Funafuti Lagoon, 6 & 7 fms., p. 5 HILES (64).

†*Isis vertebralis*, n. sp., p. 5, Cretaceous; HENNIG (60).

Keroeides gracilis Whitelegge, from Milne Bay, New Guinea, 20 fath *pallida*, n. sp., Talili Bay, New Britain, 30 fath.; HILES (65).

Lobophytum crassum Marenz. v. *sansibaricum* n. v., p. 119; v. *australicu* n. v., p. 120; MAY (89).

Metalcyonium patagonicum, n. sp.; MAY (88, p. 8).

†*Moltkia isis* Steenstrup, p. 7; HENNIG (60).

Muricella flexilis, n. sp., Funafuti, 40–71 fms., p. 49; HILES (64).

Nidalia foliacea, n. sp., Luzon, p. 101; MAY (89).

Pleurocorallium tricolor, n. sp., p. 58; *maderense*, n. sp., p. 60, *johnso* (Gray), p. 61; all from Madeira, ? *secundum*, Sandwich Islands a Japan; JOHNSON (67).

Primnoisis ambigua, Wright and Studer., Sandal Bay, Lifu, previous from Kerguelen Island; HILES (65).

Rolandia n. gen. Alcyonaria. No diagnosis; LACAZE-DUTHIERS (74).

Sarcophytum ehrenbergi Marenz. v. *sansibaricum* n. v., p. 114; *nigru* n. sp., Jaluit, p. 117; MAY (89).

Sinularia n. gen. (Alcyonidæ) for *S. brassica*, n. sp., Tumbatu, p. 10 MAY (89).

Spongodes glomerata, n. sp., New Britain, p. 166; *globulosa*, n. sp., Sou Seas, p. 167; *stolonifera*, n. sp., Japan, p. 167; *flava*, n. sp., Mad gascar, p. 168; *rubra*, n. sp., Philippines, p. 169; *mirabilis*, n. s Zanzibar, Madagascar, p. 169: *S. holmii*, n. sp., China Sea, p. 17 *arborea*, n. sp., Zanzibar, Red Sea, p. 170; *studeri*, n. sp., China Se p. 171; MAY (89).

Sympodium punctatum, n. sp., Tumbatu, p. 53; May (89).

Tubipora rubeola Q. G. v. *sansibarica* n. var., p. 63; MAY (89).

Verrucella granifera Kölliker = *V. flabellata* Whitelegge, Funafuti, 40–7 fms., p. 52; HILES (64): *V. guadalupensis* Duch. and Mich. fro Blanche Bay, New Britain, 50 fath.; previously recorded from t West Indies; HILES (65).

Villogorgia rubra, n. sp., Ellice Island, 40–71 fms., p. 49; HILES (64) *V. compressa*, n. sp., Blanche Bay, New Britain, 50 fath.; HILES (65)

Virgularia kophameli, n. sp.; MAY (88, p. 10).

Xenia rigida, n. sp., Mozambique, p. 80; *tumbatuana*, n. sp., p. 84; *quinqueserta*, n. sp., Tumbatu, p. 86; *sansibariana*, n. sp., p. 87; *bauiana*, n. sp., Zanzibar, p. 88; *medusoides*, n. sp., Tumbatu, p. 88; MAY (89): *X. hicksoni*, n. sp., Celebes; ASHWORTH (6)

ANTIPATHARIA.

SYSTEMATIC.

Antipathella brooki, n. sp., p. 384, Funafuti; WHITELEGGE & HILL (134).

ACTINIARIA.

GENERAL BIOLOGY.

Anatomy of *Palythoa brasiliensis* and *Gemmaria variabilis*; HEIDER (57).

Autotomy of the tentacles in *Bolocera*, *Polyopis* and *Boloceroides* n. g. and probably in *Polystomidium patens*; CARLGREN (21).

Development: Septal funnels (Septaltrichter) of Actinian embryos due to contraction and not homologous with the primary septal funnels of *Scyphistoma*; development of *Bunodes gemmacea*; CARLGREN (20): *Aulactinia stelloides* McMur. and *Lebrunia coralligens* (H. V. Wilson); DUERDEN (33).

Fission: Longitudinal fission in *Metridium marginatum*; PARKER (102).

Hermaphroditism: *Antholoba reticulata* Dana and *Bunodes hermaphroditicus*, n. sp.; CARLGREN (19).

Histology: Centrosomes in thread-cells of *Anemonia sulcata*; PRENANT (105); mesenterial filaments of *Zoanthus sociatus*; MCMURRICH (91).

Incubation: eggs deposited in special ectodermal pits or brood-pouches where they develop directly into actinulæ, pp. 375–380; VERRILL (129): *Condylactis georgiana* (Pfeffer). Ectodermal brood-pouches; CARLGREN (19).

DISTRIBUTION.

Faunistic: deep sea fauna, like Arctic and Antarctic littoral fauna, characterised by almost exclusive occurrence of *Actininæ*; the tropical littoral fauna by *Stichodactylinæ*; CARLGREN (21).

Tropical littoral fauna: *Stichodactylinæ*. Characteristic; CARLGREN (21).

Antarctic Zoantharia: 17 Actinians, 2 Zoanthids and 1 Madreporarian; CARLGREN (19).

East Indies: *Boloceroides*; CARLGREN (21).

Funafuti; WHITELEGGE & HILL (134).

Hawaiian Islands: *Bunodactis manni*; VERRILL (129).

Nova Scotia: *Epigonactis*; VERRILL (129).

West Indies: *Raphactis caribæa*; VERRILL (129).

SYSTEMATIC.

Actinostola intermedia, n. sp.; CARLGREN (19, p. 31).

Alloactis n. gen. type *A. excavata* (Hert.), p. 206, footnote; VERRILL (129).

Ammophilactis n. g. type *A. rapiformis* (Less.), p. 213, figg. 28 & 33; VERRILL (129).

Anthopleura japonica, n. sp., p. 218, fig. 39 ; VERRILL (129).
Archactis n. subgen. type *Paractis* (*Archactis*) *perdix* Ver. p. 209, fig. 2
VERRILL (129).
Asteractis bradleyi Ver. p. 46, figg. 10–12 ; VERRILL (129).
Boloceroides n. g. type *B. McMurrichi* (Kwietniewski). East Indies a
Zanzibar ; CARLGREN (21).
Bunodactis nov. nom. for *Bunodes* Gosse pre-occupied, p. 42 ; *B. mann*
n. sp., p. 218, Hawaiian Islands ; *inornata V.*, p. 375 ; VERRILL (129
Bunodella n. gen. type *B. stelloides* (McMur.), p. 43 ; VERRILL (129).
Bunodes octoradiatus, n. sp., p. 20 ; *hermaphroditicus*, n. sp., p. 23 ; *pat*
goniensis, n. sp., p. 21 ; CARLGREN (19).
Bunodosoma n. gen. type *B. granulifera* (Les.), p. 44 ; VERRILL (129).
Condylanthus n. g. for *C. magellanicus*, n. sp., p. 15 ; CARLGREN (19).
Epiactis prolifera V., p. 377, fig. 25, on p. 208 ; VERRILL (129).
Epigonactis n. g. type *E. fecunda*, n. sp., Nova Scotia, 150 fath., p. 37
fig. 35 ; VERRILL (129).
Epizoanthus patagonichus, n. sp. ; CARLGREN (19, p. 38).
Eucladactis nov. nom. type *E. grandis V.*, p. 49, figg. 13 & 14 ; VERRI
(129).
Gemmaria variabilis Duerd. [N.B. *Gemmaria* is pre-occupied by a Medus
Gemmaria gemmosa McCrady ; see MURBACH] ; HEIDER (57, p. 280).
G. willeyi, n. sp., p. 387, Funafuti ; WHITELEGGE & HILL (134).
Haloclava n. g. type *H. producta* (Stimp.), p. 41 ; VERRILL (129).
Haloclavidæ nov. fam. p. 41 ; VERRILL (129).
Isotealia n. g. for *I. antarctica*, n. sp., p. 25 ; CARLGREN (19).
Lebrunia danæ (D. & M.), Ver. p. 48, fig. 15 ; VERRILL (129).
Palythoa brasiliensis, n. sp. ; HEIDER (57, p. 269).
Paractis nivea (Less.), p. 209, fig. 16 ; VERRILL (129).
Parantheoides n. g. for *P. crassa*, n. sp., p. 27 ; CARLGREN (19).
Parazoanthus fuegiensis, n. sp. ; CARLGREN (19, p. 39).
Peronanthus verrucellæ n. g. et sp. [Amphianthidæ] attached in vas
numbers to colony of *Verrucella guadalupensis*, p. 203 ; HILES (65).
Phelliopsis n. gen. type *P. panamensis V.*, p. 214, fig. 37 ; VERRILL (129).
Pseudophellia n. g. type *P. arctica V.*, p. 376, fig. 34 ; VERRILL (129).
Raphactis n. gen. type *R. nitida*, n. sp., East Coast, U. S., 130 fath.
p. 144 : *R. caribæa*, n. sp., p. 205, St. Vincent, W. I., 124 fath.
VERRILL (129).
Sagartia georgiana, n. sp., p. 34 ; *lævis*, n. sp., p. 35 ; *lobata*, n. sp., p. 36
patagonicha, n. sp., p. 34 ; CARLGREN (19).
Stomphia carneola (Stimp.), p. 206, fig. 24 *a–d* ; VERRILL (129).
Synanthus mirabilis Ver. p. 211, fig. 23 ; VERRILL (129).
Zoanthus funafutiensis, n. sp., p. 385 ; WHITELEGGE & HILL (134).

MADREPORARIA.

GENERAL BIOLOGY.

Affinities of *Poritidæ* ; BERNARD (11).
Anatomy of *Cœnopsammia* ; GARDINER (39).
Association of species : *Caryophyllia communis* (Seguenza) Moseley co
habiting (recent and fossil) with *Flabellum laciniatum* (Philippi) Edw. & H.
ALCOCK (3).
Coral Reefs ; AGASSIZ (1), BASSETT-SMITH (10), DAHL (25), GARDINE
(43), SOLLAS (120).
Postembryonic development of *Cycloseris hexagonalis* (M. Edw. &
Haime) ; GARDINER (42).

Skeleton. Formation of skeleton in Alcyonaria and Madreporaria. Von Koch's "crystalline sphæroids" rehabilitated in place of Dr Maria Ogilvie's "calcified calicoblasts"; BOURNE (16).

DISTRIBUTION.

†Canada, Devonian; WHITEAVES (132).
†New York; GRABAU (44).
†Tennessee: Lower Oriskany Fauna; SAFFORD & SCHUCHERT (113).
†Ohio: Palæontology; BOWNOCKER (17).
†Jamaica: Cretaceous and Eocene Corals; VAUGHAN (128).
Antarctic: *Flabellum thouarsi* E. & H.; CARLGREN (19).
†British Cretaceous; TOMES (123).
Port-Vendres: The *Caryophyllia* of P.-V. is an expatriated *C. clavus*, p. 559; LACAZE-DUTHIERS (74).
†Catalonia, Miocene: description of 10 determined species; DE ANGELIS (5 .
†Italy; TORNQUIST (124), PARONA (103).
†Venetian Tertiary; OPPENHEIM (100).
Dardanelles; MARION (85).
†Persia: Fossil corals of Lake Urmi; GREGORY (48).
Indian Ocean: Deep-sea *Madreporaria* and the evidence which they appear to offer of a former open-sea connexion between the Mediterranean and the Indian Ocean; ALCOCK (3).
Loyalty Islands: Solitary Corals; GARDINER (41).
South Pacific; GARDINER (38 & 40).
Fiji: Coral Reefs; AGASSIZ (1).
†Australian Tertiaries; DENNANT (28).
†Cretaceous; FELIX (34), HENNIG (60), VAUGHAN (128), TOMES (123), LOGAN (82).

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Antillia sinuata, n. sp., Talili Bay, New Britain, 25 fath.; GARDINER (41).
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†*Astrangia d'Achiardii*, n. sp., p. 225. Venetian Tertiary; OPPENHEIM (100).
†? *Astrocœnia conica*, n. sp., p. 215 (Upper Cretaceous); LOGAN (82).
†*Calamophyllia* E. H., a specimen allied to *C. pseudoflabellum* described as probably new but not named; DE ANGELIS (5, p. 15).
†*Cladocora jamaicaensis*, n. sp., p. 234; VAUGHAN (128).
†*Cladophyllia birleyæ*, n. sp., Atherfield Clay, I. Wight; GREGORY (47).
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†*Cœlosmilia regularis*, n. sp., British Cretaceous; TOMES (123).
†*Diploctenium lunatum* (Brongn.) from Gosau; FELIX (34).
†*Diploria conferticostata*, n. sp., p. 239 and var. *columnaris* n. var. p. 241; VAUGHAN (128).
†*Gombertangia* n. g. *Felixi*, n. sp., p. 222. Venetian Tertiary (*Astrangiacea*); OPPENHEIM (100).

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†*Heliastræa fontana*, n. sp.; Venetian Tertiary; OPPENHEIM (100).
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†*Leptophyllia agassizi*, n. sp., p. 242, Jamaica; VAUGHAN (128).
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†*Multicolumnastræa* n. gen. for *Heliastræa cyathiformis* Duncan, p. 235; VAUGHAN (128).
†*Notophyllia* n. gen. *semivestita*, n. sp., p. 285; *gracilis*, n. sp., p. 285; *aperta*, n. sp., p. 286, all Eocene; DENNANT (28).
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†*O. guentheri*, n. sp., p. 426; *defrancei* (Edw. et Haine), p. 424; *haime* (d'Archiac); GREGORY (48).
†*Parasmilia lindströmi*, n. sp., p. 15; *scanica*, n. sp., p. 20; HENNIG (60).
†*Pattalophyllia sinuosa* (Brongn.) and *gnatæ*, n. sp.; *Leymeriei*, n. sp.; OPPENHEIM (100).
†*Phyllocœnia friulana*, n. sp. = *Ph. irradians* d'Ach. non M.-Edw. & H.; OPPENHEIM (101).
†*Phyllosmilia transiens*, n. sp. from Gosau; FELIX (34).
†*Placosmilia arcuata* M.-Edw. et H. = *Pl. consobrina* Reuss 1853 and *Pl. lobata* Fromentel, 1862; FELIX (34).
†*Platysmilia angusta* (Reuss) comprises the forms included under *Trochosmilia varians* Reuss which arise from the parent stock by budding; FELIX (34).
†*Prionastræa vaughani*, n. sp., Eocene, Alabama; GREGORY (47).
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†*Stephanosmilia d'Achiardii*, n. sp. = *Trochocyathus æquicostatus* d'Ach. non Reuss; OPPENHEIM (101).
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†*Trochosmilia hilli*, n. sp., p. 233; VAUGHAN (128).

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†*Lobopsammia faxensis* (Beck.), p. 11; HENNIG (60).
†*Stephanophyllia implexa*, n. sp., p. 283, Eocene; DENNANT (28).
†*S. numismalis*, n. sp.; TOMES (123).
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XVII. SPONGIÆ.

BY

PROFESSOR R. VON LENDENFELD.

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THE most important papers on Sponges published in 1899 are (8) in which DELAGE & HÉROUARD treat of Sponges in general; (7) in which the discussion on the position of Sponges in the animal kingdom carried on at the Cambridge Zoological Congress is given; (10) in which EVANS describes the larva and metamorphosis of *Spongilla* and publishes notes on mitosis, systematic position etc.; (33) in which SCHULZE gives an account of the Collar-cells of the *Hexactinellida*: and the systematic papers by SCHULZE on the *Hexactinellida* of the [illegible] ns (34) and by THIELE on the *Tetraxonia* of Cel-

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16. HAECKEL, E. Die Kunstformen in der Natur. Leipzig and Wien 1899. I. Lief. [Sponges: pl. 5.]

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TOPSENT, E. (61) Zool. Rec. 1898. [Summary: J. R. Micr. 1899, p. 166.]

43. ——. Documents sur la faune des Spongiaires des Côtes de Bel Arch. Biol. xvi, pp. 105–115.

44. ——. Développement d'une éponge siliceuse (*Ephydatia fluvia* Zoologie descriptive des Invertébrés, i, pp. 175–189, figg. 60–69, 1900 (appeared 1899). [After Y. Delage.]

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—— & PEKELHARING. (71) Zool. Rec. 1898. [Reprint: On Phys. Lab. Utrecht (5), 1 Deel, pp. 1–39. Summary: J. R. Micr. 1899, pp. 165 & 166.]

46. WELTNER, W. Bericht über die Leistungen in der Spongio während der Jahre 1897 und 1898. Arch. Naturg. lx (2), pp. 338.

47. *WILSON, H. V. On the feasibility of raising Sponges from the Bull. U. S. Fish Comm. xvii, 1898, pp. 241–245. [Reprint: Mitchell Soc. xv, pp. 76–85.]

48. ——. Lendenfeld's Adriatic Sponges. Amer. Natural. xxxiii, pp. 334–337.

II. BIOLOGY.

1. *MORPHOLOGY and PHYSIOLOGY.*

A. General [cf. Titles 8, 10, 13, 16, 25].

Evans (10) and Maas (25) describe mitotic cell-division in Sponges. According to Evans the collar-cells of the ciliated chambers of *Spongilla* multiply mitotically. The nuclear spindle which lies parallel to the chamber wall can be best seen in the cells of free-swimming larvæ. There appear to be 12 chromosomes. A centrosome could not be clearly made out. The chromatin forms a plate which divides into two. Each daughter-plate travels to its spindle-pole. There it forms first a ring and then a cup. Finally, whilst the cell divides, it is disintegrated and converted into small granules. According to Maas mitosis is met with in the ova when extruding the polar bodies and in the first cleavage cells of *Sycandra raphanus*.

On account of the reversion of the embryonic layers Delage & Hérouard (8) propose to replace the usual terms "ectoderm" by "epiderm" and "entoderm" by "épithélium atrial." For the interstitial layer they employ the term "mesoderm." The gastral cavity is termed "atrial" cavity.

Haeckel (16) gives some figures of artistically beautiful structures in Calcareous Sponges.

Girod (13) publishes a short general account of the Spongillidæ.

B. Canal system [cf. Titles 8, 10].

According to Evans (10) the incurrent pores on the surface which lead into the subdermal cavities are, in *Spongilla*, larger than the chamber-pores. Both are intracellular. The chambers of *Spongilla* multiply by division.

Delage & Hérouard (8) give a general, extensively illustrated account of the different forms of the canal-system in Sponges.

C. Skeleton [cf. Titles 4, 5, 8, 9, 23, 26, 39, 43].

Evans (9) does not accept the distinction between microscleres and megascleres in the usual sense and thinks it not improbable that—in Spongilla at least—the former are young stages of the latter.

Delage & Hérouard (8) publish a list of terms of sponge spicules with illustrated definitions. These terms are on the whole in accordance with the terms proposed by Schulze & Lendenfeld.

Chun (5) has discovered a hexactinellid Sponge comparable to *Hyalonema* in which however the spicule-root-tuft is replaced by one single spicule of enormous dimensions. The largest spicule of this kind observed whole is 1½ metres long and as thick as a pencil. Fragments of the diameter of a human finger also brought up by the trawl are parts of such spicules which were originally most likely 4 or 5 metres long. These spicules are composed of concentric layers of silica.

Lister (23) has a note on the skeletal elements of *Astrosclera*.

Topsent (43) found in *Stylotella inornata* masses of foreign bodies, chiefly sand-grains, which form an important part of the skeleton of that sponge.

Bütschli (4) and in a more detailed manner Sukatschoff (39) describe the structure of the fibres of Horny sponges. In *Hircinia*

the fibres composed of an axial pith and a superficial cortex. There is strict boundary between these, the former passes gradually into the lat The pith appears granular, the granules being situated in longitud rows. Both pith and cortex are spirally striated. There are two sp striations crossing each other. Desiccation and examination with h powers reveal a "Wabenstruktur" in the fibres, the whole substanc which contains small cavities lying in longitudinal and spiral lines.

D. Epithelia, Cuticula [cf. Titles 8, 33].

Delage & Hérouard (8) think that, at least in some sponge "Sollas-membrane" connecting the collar-margins of the collar-cell present. They do not believe in the existence of distal processes ari from the base of the collar-cell.

Schulze (33) publishes the results of his histological examinatio *Schaudinnia arctica*, a Rosselid Hexactinellid discovered by Schaud (vide 32). This material was very carefully preserved. The collar-c cover, as a continuous epithelium, the whole chamber-wall. The up ends of the bodies of adjacent collar-cells are attached to each other. flattened nucleus lies basally. At the base the collar-cell is consider extended and here it gives off granular processes which connect the b parts of adjacent cells. Four of the processes of each cell, situated the arms of a cross, are much stouter than the others. In adjacent col cells these extend in nearly the same direction and coalescing form network with quadratic meshes. The collar shows no visible struct There is no basal membrane in the chamber-wall. The superficial c covering the trabeculæ which traverse the incurrent cavities are st protrude from the surface and contain bulbous bodies. Their nuclei small and spherical, whilst the nuclei of the cells in the deeper layers large and oval. The smallest trabeculæ appear to be destitute of micro-nuclear epithelium: here the macro-nuclear cells reach the surfa

E. Sexual Cells, Propagation and Development [cf. Titles 10, 25, 44, 45, 47].

Evans (10) has examined the free-swimming larva and young fi individuals of *Spongilla*. The youngest larva studied is oval and consi of a single, continuous, superficial layer of elongated flagellate cells on surface and two kinds of cells, such with granular and such with vesicu nucleus in the interior. Later on small cells arranged in groups produced in the interior and the flagellate superficial cells dive down i the inner mass of cells. These flagellate cells and also the small gro cells are converted into collar-cells. During this conversion the flagell cells join for a time the vesiculo-nuclear cells of the interior, which rich in yolk-granules and form with them plasmodial masses from wh those groups of collar-cells which constitute the ciliated chambers afterwards segregated. In some larvæ only few group-cells are form in these nearly the whole of the collar-cells are derived from th originally superficial—flagellate cells. In others the group-cells beco numerous and in these a considerable number of the collar-cells of adult are transformed group-cells. Evans tries to explain the differen of the statements of previous observers concerning the origin of the coll cells in *Spongilla* with these differences of different larvæ examined himself. The outer epithelium of the sponge is derived from the granu nucleated cells of the interior. The excurrent canals are formed in s and do not grow out from the original larval cavity which in most ca completely disappears.

MAAS (25) describes the development of the ovum, and the earliest stages of the larva of *Sycandra raphanus*. The ova are specialised amœboid wandering cells. An ordinary cell of this kind grows in size and its nucleus becomes considerably larger. The nucleus lies centrally and contains a nucleolus. The chromatin forms a very fine and complicated network of threads. When the ovum ripens the chromatin-network becomes more coarse, the single nucleolus is replaced by several, and the nucleus wanders towards the surface. Then the polar bodies are formed mitotically. One of them perhaps remains in the ovum. The nucleus of the spermatozoon, which now enters, has the same size as the nucleus of the ovum. The two nuclei join under the formation of Chromosomes and immediately produce the first cleavage-spindle. The first, second and third cleavages are meridional, the fourth is aequatorial.

F. PHYSIOLOGY [cf. Titles 8, 20].

DELAGE & HÉROUARD (10) consider the collar-cells as the elements which resorb the food and which excrete the useless products.

LENDENFELD (20) in criticising Loisel's statements [Zool. Rec. 1898, (35)] points out that anilin dyes can be taken up by any (living) cells, so that their absorption can be no proof of a food-resorbing function of such cells.

G. HABITS, BIONOMICS [cf. Titles 12, 13, 14, 24, 37, 47].

LO BIANCO (24) gives a list of the Sponges in the Bay of Naples with notes on their habitats and times of producing larvæ.

GIROD publishes statements concerning the mode of life of *Carterius bohemicus* (12) and the Freshwater Sponges generally (13).

GRAVIER (14) dwells on the suspension of vital functions in Freshwater Sponges during the dry season.

2. *GEOGRAPHICAL DISTRIBUTION.*

A. GENERAL [cf. Titles 11, 34, 42].

SCHULZE (34) compares the *Hexactinellids* of the Atlantic and Pacific American waters. Of the 9 families 7 occur in both, 2 in the Atlantic alone. Of the 39 genera only 9, and of the 66 species only 2, are common to both. In the Atlantic the *Euplectellidæ*, *Asconematidæ* and the more complicated Dictyonine forms predominate, whilst the Rossellids are characteristic of the Pacific.

Concerning the depths in which American Hexactinellids have been found SCHULZE (34) states that *Rhabdocalyptus dawsoni* occurs in the shallowest (55 metres) and *Caulophacus agassizii* in the deepest (3235 metres) water.

B. FAUNISTIC [cf. Titles 1, 5, 9, 11, 13, 15, 19, 21, 24, 29, 32, 34, 41, 42, 43].

Continent of Europe.—GIROD (11, 13) gives accounts of the geographical distribution of the European Freshwater Sponges.

Continent of Africa.—EVANS (9) describes two species of Spongillids from Lake Tanganyika.

Continent of America.—GRAVIER (14) describes a Freshwater Sponge from Venezuela.

British Coasts, North Sea.—ALLEN (1) mentions two species of *Clav* from the Eddystone grounds. CHUN (5) dwells on the richness in Spo in the region of the cold current near the Faröe Islands where se Hexactinellids and over 400 specimens of *Thenea muricata* were t by the "Valdivia." TOPSENT (43) gives a list of 33 sponge-species the Belgian coast.

Mediterranean.—LO BIANCO (24) enumerates 32 species of Sponges the Bay of Naples.

Arctic Sea.—SCHULZE (33) enumerates 3 species of Hexactinellids the Arctic sea, north of Spitzbergen. SCHAUDINN (32) mentions occurrence of Calcarea and Hexactinellida in the Arctic Sea.

Tropical Atlantic.—JOHNSON (19) describes five species of boring *Cl lina* from Madeira.

American waters (Pacific and Atlantic).—SCHULZE (34) describe species of Hexactinellids from American waters. The American Hex nellid fauna shows no peculiarities. All the known recent familie Hexactinellids occur in them and none are peculiar to them.

South Atlantic.—PRATT (29) describes 2 species of Calcarea from Falkland Islands.

Indian Ocean.—CHUN (5) describes a Hexactinellid with enor peduncle spicule from the Somal coast of Africa.

Northern Pacific.—GRAVIER (15) describes 10 species of Hexactine from Japan.

Central Pacific.—THIELE (41) describes 31 species of *Tetraxonia* Celebes (Kema). THOMPSON (42) describes a Hexactinellid from Kermadec Islands.

Antarctic Ocean.—CHUN (5) found Hexactinellids in the Antarctic O in a depth of 4636 metres.

3. *GEOLOGICAL DISTRIBUTION* [cf. Titles 2, 6, 17, 18, 36, 38

Senonian.—SCHRAMMEN (36).

Carboniferous.—Kansas, BEEDE (2); Nebraska, CLARKE (6); Derbysl SOLLAS (38).

Palæozoic generally.—Victoria, HALL (17); North America, HAL CLARKE (18).

4. *PHYLOGENY* and *CLASSIFICATION* [cf. Titles 7, 8, 10, 13, 3

In the discussion concerning the position of sponges in the ani kingdom (7) carried on at the Cambridge Zoological Congress the follow opinions were expressed: DELAGE thinks that the reversion of the bryonic layers which is peculiar to Sponges entirely separates them fi all other poly- and hetero-cellular animals. He says "The Spongidæ a main, although a small branch arising directly from the stem of genealogical tree, independently of the branches of the Cœlenterata an the other Metazoa." MINCHIN considers it "most probable that comparison is possible between either the larvæ or the adult" spon and the Cnidaria and "that they are to be regarded as independe developed from Choanoflagellata." VOSMAER is "thoroughly convin that it is not possible to say more than—we do not know." SAVI KENT considers it desirable that living collar-cells of Sponges should more carefully studied. He thinks that only in this way the relations of Sponges can be clearly made out. Apparently he is still inclined consider them as Protozoa. SCHULZE doubts the possibility of determin the systematic position of sponges by means of the embryonic d known at present and thinks that the sponges should be placed in radial Cœlenteria side by side with the Cnidaria.

DELAGE & HÉROUARD (8) consider the Sponges as a separate phylum for which they propose the name "Enantiozoa."

From his observations on mitosis and cleavage MAAS (25) concludes that the Sponges are Metazoa.

EVANS (10) does not consider the reasons brought forward in favour of a separation of the Sponges from the Protozoa as valid and tries to show that there are many resemblances between these two groups.

PRZIBRAM (30) considers the Sponges phylogenetically as a branch of the Hydromeduse stem.

DELAGE & HÉROUARD (8) propose the following classificatory arrangement of Sponges:

I. Class Calcarea.

(1) Ordo Homocœlida (Fam.: Asconinæ, Homoderminæ).

(2) Ordo Heterocœlida (Fam.: Syconinæ, Leuconinæ, Eilhardinæ, Pharetroninæ).

II. Class Incalcaria.

1. Sub-Class Triaxoniæ.

(1) Ordo Hexactinellida (1. Sub-ordo Lyssacidæ, Fam.: Euplectellinæ, Asconematinæ, Rossellinae, Hyaloneminæ; 2. Sub-ordo Dictyonidæ, Fam.: Farreinæ, Euretinæ, Mellitioninæ, Coscinoporinæ, Tretodictyinæ, Mæandrosponginæ, Stauroderminæ, Ventriculitinæ, Coeloptychinæ).

(2) Ordo Hexaceratina (Fam.: Darwinellinæ, Aplysillinæ, Halisarcinæ).

2. Sub-class Demospongiæ.

(1) Ordo Tetractinellida (1. Sub-ordo Choristidæ, 1. Tribus Sigmatophorina, Fam.: Tetillinæ; 2. Tribus Astrophorinæ, Fam.: Theneinæ, Pachastrellinæ, Stellettinæ, Geodinæ; 3. Tribus Microsclerophorina, Fam.: Plakininæ, Oscarellinæ, Chondrosinæ; 2. Sub-ordo Lithistidæ, 1. Tribus Triaenina, Fam.: Tetracladinæ, Desmanthinæ, Corallistinæ, Plerominæ; 2. Tribus Rhabdosina, Fam. Neopeltinæ; 3. Tribus Anoplina, Fam.: Azorizinæ, Anomocladinæ).

(2) Ordo Monaxonida (1. Sub-ordo Hadromeridæ, 1. Tribus Aciculina, Fam.: Tethyinæ, Coppatinæ; 2. Tribus Clavulina, Fam.: Spirastrellinæ, Streptasterinæ, Suberitinæ, Polymastinæ, Clioninæ; 2. Sub-ordo Halichondridæ, Fam.: Spongillinæ, Homorrhaphinæ, Heterorrhaphinæ, Desmacidoninæ, Axinellinæ).

(3) Ordo Monoceratida (Fam.: Sponginæ, Filiferinæ, Spongelinæ, Auleninæ).

SCHULZE (34) is now of the opinion that the dictyonine and lyssacine Hexactinellids are not sharply separated from each other but that there is a well marked distinction between the forms with Amphidiscs and those with Hexasters according to which the Hexactinellida should be divided into the two groups Amphidiscophora and Hexasterophora. He also discusses the families and gives some diagnoses.

GIROD (13) gives a classificatory scheme of the Spongillidæ.

5. *METHODS* [cf. Titles 10, 13, 31, 39].

ROUSSEAU (31) gives a general account of the methods employed i study of Sponges.

GIROD (13) discusses preserving reagents for Freshwater Sponges.

SUKATSCHOFF (39) treats fibres of horny Sponges with eau de Ja chromic acid and gentian violet for the purpose of demonstrating minute structure.

EVANS (10) describes the methods employed by him in the stu larvæ and young fixed individuals of *Spongilla*.

III. SYSTEMATIC.

A. RECENT SPONGES.

CALCAREA.

HOMOCŒLA [cf. Title 24].

[Nothing new.]

HETEROCŒLA [cf. Titles 6, 24, 29].

Sycon ciliatum and *S. ramsayi* redescribed, PRATT, Mem. Manchestei xlii, No. 13.

SILICEA.

TRIAXONIA.

HEXACTINELLIDA [cf. Titles 5, 15, 34, 35].

SCHULZE, Amer. Hexact., describes the following new genera:

Calycosoma, p. 27;
Calycosaccus, p. 30;
Aphorme, p. 40;
Acanthosaccus, p. 65;
Claviscopulia, p. 76;
Bathyxiphus, p. 82.

SCHULZE, in Amer. Hexact., describes the following new species:

Hyalonema schmidti, p. 6; *H. hercules*, p. 9; *H. populiferum*, p. 10 *ovuliferum*, p. 13;
Holascus undulatus, p. 15;
Calycosoma validum, p. 27;
Calycosaccus ijimai, p. 30;
Caulophacus agassizii, p. 36;
Aphorme horrida, p. 40;
Bathydorus uncifer, p. 42;
Acanthascus plutei, p. 45;
Staurocalyptus solidus, p. 51; *S. fasciculatus*, p. 53;
Rhabdocalyptus tener, p. 57; *R. nodulosus*, p. 58; *R. asper*, p. 60 *mirabilis*, p. 61;
Acanthosaccus tenuis, p. 66;
Farrea aculeata, p. 69; *F. convolvulus*, p. 71;

Eurete erectum, p. 72;
Claviscopulia intermedia, p. 76;
Chonelasma tenerum, p. 81;
Bathyxiphus subtilis, p. 82.

SCHULZE, in Amer. Hexact., redescribes:

Hyalonema toxeres, p. 4; *H. kenti*, p. 5;
Euplectella suberea, p. 17;
Regadrella phœnix, p. 20;
Hertwigia falcifera, p. 22;
Asconema setabulense, p. 25;
Sympagella nux, p. 32;
Staurocalyptus dowlingi, p. 47;
Rhabdocalyptus dawsoni, p. 54;
Farrea occa, p. 68;
Chonelasma calyx, p. 78;
Aphrocallistes bocagei, p. 85; *A. vastus*, p. 86.

SCHULZE, SB. Ges. naturf. Berlin 1899, p. 112, redescribes *Hyalonema affine* and identifies *H. apertum* and *H. maehrenthali* with this species.

HEXACERATINA.

[Nothing.]

TETRAXONIA.

TETRAXONIDA.

TETRACTINELLIDA [cf. Titles 22, 41].

Ecionema agglutinans, THIELE, Bibl. Zool. xxiv, ii, p. 7, n. sp.
Theonella swinhoei and *Tetilla australiensis*, THIELE, Bibl. Zool. xxiv, ii, p. 6, redescribed.
Notes on synonymy (*Ancorina*, *Ecionema*, *Erylus*, *Isops*), LINDGREN, Zool. Anz. xxii, p. 87.

LITHISTIDA.

[Nothing.]

MONAXONIDA.

CLAVULINA [cf. Titles 1, 3, 19, 41, 43].

JOHNSON, J. Micr. Soc. 1899 establishes the new genera *Nisella*, p. 463 and *Scantilla*, p. 462.
Melophlus, THIELE, Bibl. Zool. xxiv, ii, p. 8, n. gen.

JOHNSON, J. Micr. Soc. 1899, describes the new species:

Acca insidiosa, p. 461; *A. rodens*, p. 462; *A. infesta*, p. 462;
Nisella verticillata, p. 463:
Scantilla spiralis, p. 462;
Melophlus sarasinorum, THIELE, Bibl. Zool. xxiv, ii, p. 8, n. sp.;

THIELE, Bibl. Zool. xxiv, ii, redescribes *Placospongia melobesioides*, p. 9 and *Spirastrella inconstans*, p. 10.
BERG, Comun. Mus. Buenos Aires i, p. 77, replaces the generic name *Anisoxya* Topsent, 1898, previously occupied by *Topsentia*.

CORNACUSPONGIÆ.

Marine Forms [cf. Titles 37, 40, 41, 43].

Liosina, n. gen., THIELE, Bibl. Zool. xxiv, ii, p. 16.

THIELE, Bibl. Zool. xxiv, ii, describes the following new species :

Phycopsis valida, p. 12;
Auletta celebensis, p. 12;
Raphidophlus seriatus, p. 14; *R. erectus*, p. 14; *R. topsenti*, p. 15;
Echinodictyum cavernosum, p. 15;
Liosina paradoxa, p. 17;
Lissodendoryx similis, p. 18;
Rhizochalina media, p. 19;
Petrosia imperforata, p. 20; *P. contiguata*, p. 20; *P. rava*, p. 20; *P. ch niformis*, p. 21.
Gelliodes spinosella, p. 22;
Siphonella ingens, p. 23;
Spinosella elegans, p. 23;
Druinella ramosa, p. 24;
Luffariella elegans, p. 25;
Phyllospongia palmata, p. 26; *P. coriacea*, p. 27;
Dysideopsis reticulata, p. 28.

Stylotella inornata, TOPSENT, Arch. Biol. xvi, p. 107, redescribed.

THIELE, Bibl. Zool. xxiv, ii, redescribes :

Jotrocha baculifera, p. 18;
Histoderma navicelligerum, p. 18;
Gellius toxius, p. 21.

TOPSENT, Arch. Biol. xvi, pp. 113–115, enumerates the Bowerbank species which belong to the genus *Stylotella*.

THIELE, Arch. Naturg. lxv (1), p. 87, discusses the nomenclature a affinities of *Suberites crambe* and *fruticosus* O. Schmidt (*Tetranth fruticosa* Lendenfeld) and says that the sponge should be tern *Crambe crambe* and placed in the *Desmacidonidæ*.

SPONGILLIDÆ

[cf. Titles 9, 11, 12, 13, 14, 28].

EVANS, Quart. J. Micr. Sci (n. s.) xli, describes the new species *Spongi moorei*, p. 472 and *S. tanganyikæ*, p. 481.

Parmula geayi, GRAVIER, Bull. Mus. Paris v, p. 128, n. sp.

GIROD, Bull. Soc. zool. France xxxiv, pp. 51–53 and Le Micrograp Préparateur vii, pp. 106–115, redescribes the European species.

Carterius bohemicus, GIROD, Bull. Soc. zool. France xxiv, p. 54, redescrib

FOSSIL SPONGES

[cf. Titles 2, 6, 17, 18, 23, 36, 38].

†*Somospongia*, n. gen., BEEDE, Kansas quart. viii, p. 128.

†*Cephalorhaphiditis*, n. gen. and *Shelleya*, n. gen., SCHRAMMEN, Mit Römer Mus. Hildesheim, No. 10.

HALL, P. Soc. Victoria xi, describes the new species *Protospongia oblon* p. 152 and *Stephanella* (?) *maccoyi*, p. 153.

(Further fossil species in 18 and 36, which publications were not se by the recorder.)

XVIII. PROTOZOA.

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CONTENTS.

INTRODUCTION.

THE Record of *Protozoa* for 1899 is the smallest of all Records of *Protozoa* for some years past. Interest in pathological questions and in *Sporozoa* generally shows no sign of decline but there seems to be hardly the same amount of energy devoted to *Foraminifera* as in some previous years. But, on the whole, if there are fewer titles, in point of interest this Record compares very favourably with its predecessors containing, as it does, almost all the papers of recent importance on Malarial Fever. The researches of GRASSI, BIGNAMI, BASTIANELLI, ROSS, KOCH, DIONISI and others have now established the rôle of the transf

this disease, and the life-history of the parasite has been the subje much investigation. DANIELLS has worked on the transference of *Haem zoa* by means of mosquitos to birds and all the endoglobular blood para come in for a great share of attention.

On *Sporozoa* in general we have papers of importance and inte LÉGER & LAVERAN have both added to our knowledge of these forms considerable extent, as in former years. LAVERAN & MESNIL descri curious toxin—Sarcocystin—formed by *Sarcosporidia*.

Especial mention must be made of LABBÉ'S *Sporozoa* in "Das Tierrei a work that cannot fail to be of the greatest use to specialists on class. MESNIL on the "Classification of *Sporozoa*" is a paper of v whilst CAULLERY & MESNIL'S papers, and especially that on the *A sporidia*, a new order with *Aplosporidium*, n. g., as its type, cannot fai command attention. LABBÉ on the affinities of *Siedleckia* may, suita be referred to here.

There are many papers of interest dealing with other classe *Protozoa* but all cannot be mentioned here. As already stated, *Foraminifera* do not comprise so many papers this year. MILL completes his account of the living *Foraminifera* of the Malay Ar pelago, and EIMER & FICKERT'S lengthy memoir on the forms, relationsh classification, and various other matters connected with the class cont much that is of interest both from the philosophical and zoological po of view. On the *Radiolaria* few papers have been published but severa them are of great length. RÜST, VINASSA DE REGNY & HINDE descri very great number of new species and genera. Indeed the System Record of *Radiolaria* this year is very much longer than the combi Records of other classes. VINASSA DE REGNY describes a great numbe what he calls "new forms." Presumably most of these are new spec but the Recorder has not recorded them as such, preferring to give t the designation considered suitable by their describer.

PLATT'S paper on the specific gravity of *Paramecium* and *Spirostom* is interesting for the author's method adopted in the determination.

WAGER'S memoir on the relations between the "Eye Spot and Flagell of *Euglena*" is a fascinating little work and JENNINGS' papers on psychology and reactions to stimuli of Protozoa are sure to excite s attention.

The reproduction—and associated problems—of *Protozoa* receive att tion from HOYER in the case of the nucleus of *Colpidium*, HERTWIG *Arcella*, SCHEEL on *Amœba* & WALLENGREN on Conjugation of *Vorticelli*

In conclusion JENKINSON'S review of HIERONYMUS' memoir on *Chla domyxa labyrinthuloides* may be mentioned.

I. TITLES.*

1. ALLEN, E. J. On the fauna and bottom-deposits near the Thi Fathom Line from the Eddystone Grounds to Start Point. J. M Biol. Ass. v, pp. 365–542, 16 Charts.

   BASTIANELLI, G. [See BIGNAMI & BASTIANELLI (3) and GRA BIGNAMI & BASTIANELLI (43–47).]

2. ——, BIGNAMI, A. & GRASSI, B. Cultivation des formes en croiss malariques de l'homme chez l'*Anopheles claviger* Fabr. (synony *Anopheles maculipennis* Meig.). Arch. ital. Biol. xxxi, pp. 255, 256.

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II. BIOLOGY.

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†*Ephipipiellum*, n. g. defined for *symmetricum*, Miocene of Wieliczki, described, p. 224, pl. i, figg. 3*a–e*, ŁOMNICKI, Kosmos polski. xxiv.

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†*Fusulinella loczyi*, Palæozoic, China, p. 228, LÖRENTHEY in COUNT SZÉCHENYI'S "Keletarzsiai utjának tudomanyos Eredmenye," n. sp.

†*Globigerina ? cretacea*, Miocene, Wieliczki, p. 223, pl. i, figg. 2*a–c*, ŁOMNICKI, Kosmos polski xxiv.

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†*H. latidorsatum* var. *crassitestum*, nov. Tithonian, Stramberg, p. 2, pl. i, figg. 10 & 11, PERNER, Rozpr. Ceske Ak. Praze ii, vii.

†*H. microspirale*, from Cambridge Greensand at Swaffham, Cambs, described and figured, p. 52, figg. 1*a* & *b*, CHAPMAN, Ann. Nat. Hist. (vii) iii, n. sp.

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†*Linderina*, sp. indet., p. 262, pl. x, fig. 6, NEWTON & HOLLAND, Ann. Nat. Hist. (vii), iii.

†*Lingulina szechenyii*, p. 237, *nankingensis*, p. 239, Palæozoic, China, LÖRENTHEY in COUNT SZÉCHENYI'S "Keletarzsiai utjának tudomanyos Eredmenye," n. sp.

†*Lituola placentula*, from Cambridge Greensand at Swaffham, Cambs., described and figured, p. 54, figg. 2 *a—b*, CHAPMAN, Ann. Nat. Hist. (vii) iii: †*L. moravica*, Tithonian, Stramberg, p. 2, pl. i, figg. 1 & 2, PERNER, Rozpr. Ceske Ak. Praze ii, vii, n. spp.

†*Nodosaria paupercula*, abnormal specimen from Cambridge Greensand at Swaffham, described and figured, p. 65, fig. 5, CHAPMAN, Ann. Nat. Hist. (vii), iii.

†*N.*, sp., Palæozoic, China, p. 235, LÖRENTHEY in COUNT SZÉCHENYI'S "Keletarzsiai utjának tudomanyos Eredmenye," n. sp.

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†*Spirolecta annectens*, Cambridge Greensand of Swaffham, trimorp development of the test, p. 58, fig. 4, CHAPMAN, Ann. Nat. Hist. iii.

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(Vacant.)

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INDEX-VOLUME

OF THE

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THE Council of the Zoological Society has given instructions for the publication of an Index-Volume to the new generic names mentioned in the 'Zoological Record,' Vols. xvii.–xxxvii. (1880–1900).

The Volumes previous to Vol. xvii. have been indexed in the 'Nomenclator Zoologicus' of Scudder, published by the Smithsonian Institution in 1882. The contemplated Index-Volume of the 'Zoological Record,' in order to increase its usefulness, will include names omitted from Scudder's list and from the volumes of the 'Zoological Record.' Thus zoologists may have at their disposal (in the 'Nomenclator Zoologicus' and the new Index together) a complete list of all the names of genera and subgenera used in zoology up to the end of 1900.

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October 1st, 1900.
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